

OPERATING AND MAINTENANCE MANUAL

MINI BACKHOE LOADERS

HMK 62 SS

From serial numbers : C00001 -

HİDROMEK 2016

CAUTION

Always keep this manual in the operator's cab. Read, understand and follow all safety instructions given in this manual before operating the machine.

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Publication No: Y10/12336

Rev No: 13

Date of publication: 21.06.2016

Original Instructions

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1. INTRODUCTION

1.1. FOREWORD

Thank you for your choice of HMK Backhoe Loaders which will be rewarded by the versatility, performance and efficiency of the machine.

HMK Series Backhoe Loaders are user friendly and truly economical to operate and to maintain.

The information in this operating and maintenance manual is prepared to give you necessary assistance in safe and proper use of the machine. It also provides information for preparing, adjusting, maintaining and servicing your Backhoe Loader. This Manual is not intended to train the operators in loading and excavation.

Keep this operating and maintenance manual with the backhoe loader in good condition at all times. If the machine is resold, HIDROMEK recommends that this manual also be delivered together with the machine to the new owner.

HIDROMEK Dealers and service stations are always ready to provide you with any technical assistance and genuine spare parts you may need. Make sure that you always use HIDROMEK genuine spare parts to keep the machine performance high and to benefit from HIDROMEK's warranty coverage.

Give complete information when ordering spare parts. Include the model and serial number of your machine and its basic component.

Record the serial numbers of your machine and the basic components in the spaces provided on the next page as a handy record for quick reference.

HIDROMEK strongly advises that you fully read and understand the contents of this manual in order to become familiar with your machine. It is strictly forbidden to operate this machine by persons other than an experienced operator with a valid operator's license.

WARNING

Any modifications on HIDROMEK products and the attachments are subject to our written approval. Otherwise, machine and/or components can not be covered by HIDROMEK's warranties.

Special equipment and attachments are not included in this manual.

The information given in this manual is true on the date it is printed. Some descriptions, illustrations and pictures may be different from configuration of your machine as a result of HIDROMEK's dedication to continuous improvement policy.

Manuals are updated periodically to reflect any changes. Please ask the latest edition of this manual in case your machine has different equipment on other than shown in this document.

HIDROMEK always reserves the right to make changes and/or improvements in the material, design and construction of its machines and equipment without prior notice. HIDROMEK is not obliged to apply such changes intended for new machines on the machines already delivered to customers.

1.2. CE MARKING AND EMC DIRECTIVE

This machine meets valid "Essential Health and Safety Requirements" provided in the EU Machinery Safety Directive 2006_42_EC in effect in the European Union, and therefore carries a CE Marking and is supplied with an EU Declaration of Conformity.

The CE Marking also testifies that the machine complies with EU EMC (Electromagnetic compatibility) Directive 2004/108/EC.

This Declaration of Conformity must be kept with the machine at all times and accompany the machine If it is sold to another person.

The Declaration of Conformity covers all attachments supplied by Hidromek. Therefore any modification or use of not-approved attachment or component on the machine may invalidate the Declaration of Conformity and necessitate an issuing of a new one. The user will be responsible for liabilities involved.

Safety must be a priority at all times and the machine must be used for the works described in the INTENDED USE OF THE MACHINE paragraph, and only with attachments and components supplied or approved by Hidromek.

1.3. BACKHOE LOADER DESCRIPTION**1.3.1. DESCRIPTION OF THE MACHINE AND ITS INTENDED USE**

The machine as described in this manual is a machine used to excavate using a BACKHOE attached to the back of the machine, and to load material using a LOADER attached to the front of the machine.

The machine can also be used to lift materials, to clean ditches and trenches; as a forklift, a log loader, street sweeper, auger, snow remover, ripper, winch and rock breaker, by using additional attachments recommended and/or supplied by HIDROMEK appropriate for the job.

The machine and its attachments must be used in accordance with the intended use, and instructions regarding operation and maintenance of the machine and its components given in this manual must be followed.

All safety measures and notes must be respected.

1.3.2. DESIGNATION OF “LEFT SIDE” and “RIGHT SIDE”

FRONT side of the machine is the loader side

BACK side of the machine is the backhoe side

DRIVING POSITION is the road driving condition of the machine when the operator is driving the machine with the LOADER of the machine in front him.

RIGHT SIDE of the machine is the “RIGHT” of the operator when he is seated in the driving position.

LEFT SIDE of the machine is the “LEFT” of the operator when he is seated in the driving position.

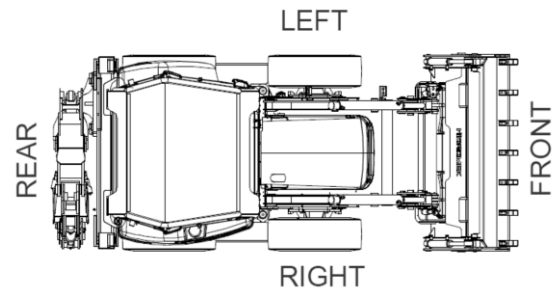
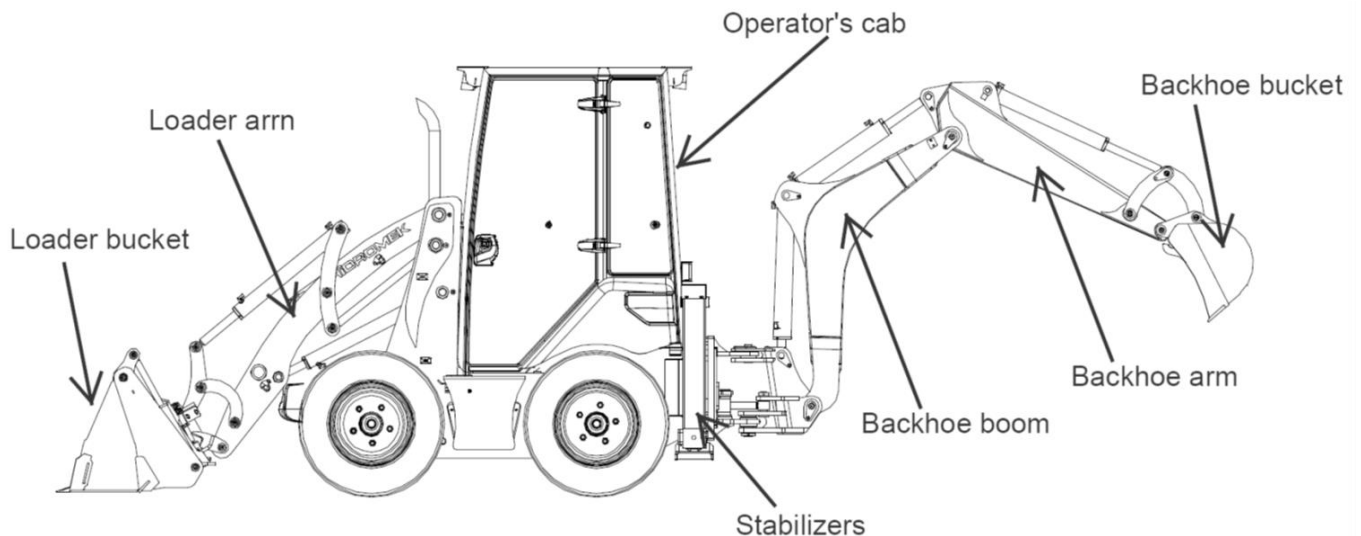
**1.3.3. MAIN COMPONENTS OF BACKHOE LOADER**

Figure 1-1

1.4. IDENTIFICATION PLATE

Machine identification plate is located under the right hand side of the operator's cab. Serial numbers of the machine, front and rear axles and engine as well as year of manufacture are included on this plate. Serial numbers of each component are also indicated on the identification plate attached to the component itself.

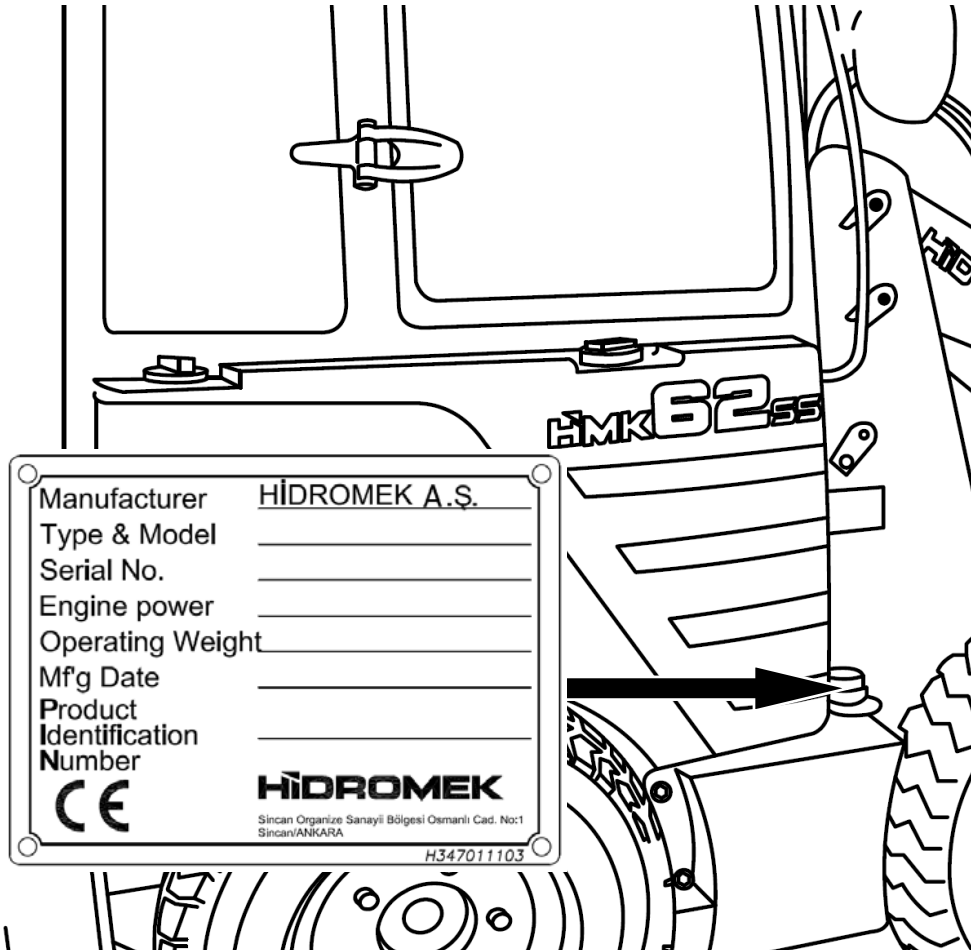


Figure 1-2

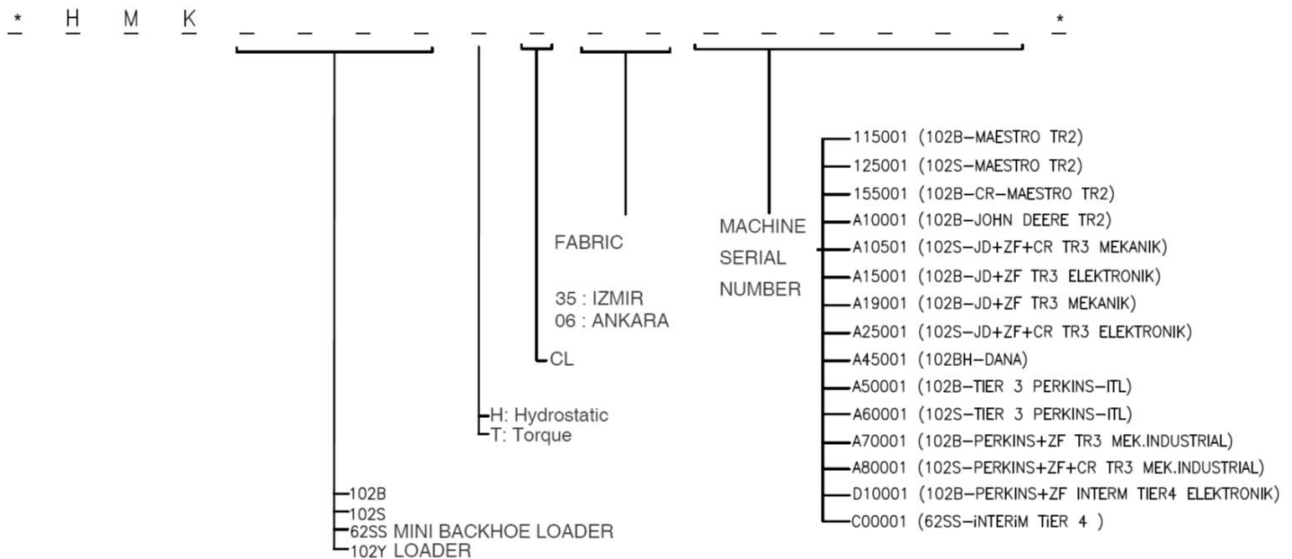


Figure 1-3 - PIN

1.5. SAFETY NOTICES

There are safety notices in this manual and on the machine for risks involved. These notices should be read and observed carefully. Safety notices start with wordings "DANGER", "WARNING", "CAUTION". Their meanings are explained below:

a) **DANGER:** Signifies an extremely hazardous situation which, if not avoided, will result in death or serious injury for the operator (and/or others) and is indicated at the right hand column:



b) **WARNING:** Signifies a potentially hazardous situation which, if not avoided, will result in death or serious injury for the operator (and/or others) and is indicated at the right hand column:



c) **CAUTION:** Is used to remind a safety practice. Signifies a potentially hazardous situation which, if not avoided, may result in injury for the operator (and/or others) and also in possible damage to the machine and its components. It is indicated at the right hand column:



1.6. OTHER NOTICES

a) **NOTE:** Provides important information and hints on correct and efficient use of the machine or how to proceed. Non-compliance may lead to malfunction. It is represented as shown at the right hand column:



b) **WRONG:** This symbol indicates a prohibited action or hazardous location. Failure to understand and obey this notice may result in injury to you or others, and cause damage to equipment. It is represented as follows:



c) **RIGHT (OK):** This symbol identifies correct and recommended action. It is represented as shown at the right hand column:



All construction equipment and machines can be hazardous. When a machine is correctly operated and properly maintained, it is a safe machine to work with. Otherwise it can become a danger for everyone.

1.7. ENVIRONMENTAL STANDARDS

The environmental standards, laws and regulations currently valid must be observed AT ALL TIMES when operating or working on the machine.

During installation, maintenance and repair work, extreme care must be taken to ensure that ECOLOGICALLY HARMFUL substances such as;

- lubricating oil and grease
- hydraulic oil
- fuel
- coolant
- liquid detergents containing solvent

Do not spill on the ground or discharge into the sewerage system.

These substances must be kept, transported, collected and disposed of in suitable containers in accordance with the local laws and regulations in effect. If above mentioned liquids spill on the ground, the problem must be eliminated immediately and the liquid be bound with suitable binding agents. If necessary, the contaminated soil must be excavated. Binding agents and excavated material must be disposed of properly.

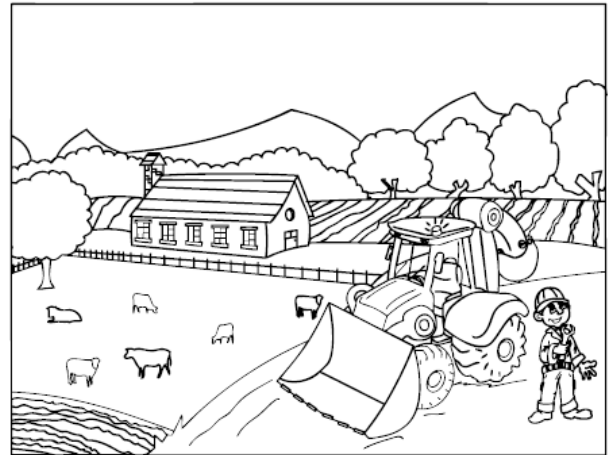


Figure 1-4

1.8. WARNING SYMBOLS

The following table briefly explains the meanings of the pictograms and warning symbols which may exist on your machine.



Danger



Warning



Read manual



Engine preheat



Engine oil level



Coolant level



Caution



Note



Charge indicator



Engine oil pressure



Coolant temperature



Transmission oil pressure



Fuel level



Air conditioner



Hydraulic oil temp.



Hydro clamping



Turn light left



Parking lights



Rear window wiper + water



Forward



Blower fan (2 speed)



Horn



Parking brake



Hazard flashing lights



Turn light right



Working lights



Warning beacon



Reverse



1.9. COPYRIGHT

Copyright of this book belongs to "HİDROMEK-Hidrolik ve Mekanik Makine İmalat Sanayi ve Ticaret Anonim Şirketi". This book covers instructions for effective use and maintenance of the machine and is intended for use by people who are responsible for use, maintenance, repair and inspection of the machine. HİDROMEK can not be held responsible in case any problem arises due to misuse of the machine and holds the rights to take legal actions in case of such a non-conformity.

1.10. SPARE PARTS AND SERVICE

HİDROMEK warrants to its customers the supply of spare parts and after sales services for the machines they buy for at least 10 years from the date of manufacture.

2. SAFETY

WARNING

In order to use this machine, you must have a valid operator's license and you must be an experienced operator. If not, you yourself can become a danger for others and for yourself. Keep this manual in the operators cab at all times. Keep it clean and complete. If lost or damaged, ask your HIDROMEK dealer or service station for a new copy.

Do not operate or service the machine until all instructions in this manual have been thoroughly read and understood. Improper operation or maintenance of the machine may cause accidents and could result in serious injury or death.

If you think any information contained in this book needs further clarification, or incomplete or erroneous, consult your authorized service or dealer for further information.

5. Procedures and/or pictures that are included in this manual may not match the configuration of your machine due to dedication of HIDROMEK to continuous development. Therefore when doing the maintenance or repair some information and values (maintenance, adjustment, torque etc..) can be different from those stated in this manual. Using the wrong values effects machine safety and increases the risk of accident.

Therefore, consult Hidromek Authorized Service or Dealer if you think such a situation exists and be informed about the part or component before operating or maintaining.

6. When working on the machine, operator must be aware of the weight of the parts and components. If it is necessary to remove or disassemble and reassemble/reinstall a part or equipment, make sure you re-install it correctly into place.

2.1. GENERAL SAFETY INFORMATION

1. Most machinery accidents are due to negligence of precautionary measures and safety rules. Therefore, all precautionary measures, DANGERS, WARNINGS, CAUTIONS and NOTES contained in this manual and on the machine must be read and understood by all personnel before working with/operating the machine.

2. Persons who work with machine or perform maintenance or repair activities must be experienced and trained in work related subjects. Otherwise probability of accidents will increase. If you do not have adequate knowledge on the work to be done, do not perform the job and consult HIDROMEK Authorized Service for assistance.

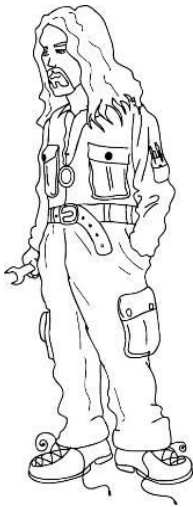
3. It is not possible to predict all dangers involved while you work with the machine. Use your own judgment for possibilities of dangers involved, be informed on the job to be done. You will reduce the risk of accidents if you perform safety inspections and follow safe working methods as recommended in the manuals.

4. When you work with a component, a part or a process which is not supplied by HIDROMEK, be sure about what you do, and perform it right and safely. Make sure you have necessary product operating and maintenance manuals and you read it completely. Use components and parts supplied or recommended by Hidromek.

2.2. SAFETY PRECAUTIONS**⚠ WARNING**

Safety is directly related to proper maintenance and servicing as well as correct use of the machine. All inspection, maintenance, repair and servicing jobs must be done **ONLY BY AUTHORIZED HIDROMEK SERVICE STAFF** and in accordance with respective manuals supplied by HIDROMEK. Carrying out improper lubrication or maintenance procedures are dangerous and could result in injury or death. Read and understand the operating & maintenance manual before performing any lubrication or maintenance.

1. Read and understand all warning signs and decals on the machine before operating, maintaining or repairing this machine.
2. Loose clothing, loose cuffs, long hair, necktie can get caught between the machine parts. Always wear suitably fitting overalls, safety shoes, hard hat, and equipment to suit the job. Wear protective goggles when using hammers, punches or drifts on any part of the machine or attachments. Use welding gloves, face shield, welder's apron and protective clothing appropriate for the welding job to be done. Confine hair and remove personal objects like ring, necklace, and loose jewelry.

**Figure 2-1**

3. Disconnect the battery and discharge capacitors before starting any maintenance or repair work. Hang a "DO NOT OPERATE" warning tag in the operator's cab. Keep the starter key with you.
4. If possible, make all repairs with the machine parked on a level, firm and dry surface. Block the machine to avoid self-rolling during repair on or under the machine.
5. Do not work on any machine that is supported only by lift, jacks or a hoist. Always use sound blocks or jack stands, capable of supporting the machine before starting any disassembly.

6. Release all pressure in air, oil or cooling systems before dismounting any hoses, lines, fittings or related items. Be aware of any potential high pressure leakage when disconnecting any device

7. Lower the bucket or other attachments to the ground before carrying out any work on the machine. If you are not experienced, ask assistance of an experienced operator to do this. If this can not be done, make sure that the bucket or any other attachment is blocked correctly to prevent it from dropping unexpectedly.

8. To avoid lumbar injury, use a hoist when lifting components over 25 kg (50 lbs). Make sure all chains, hooks, slings, etc., are in good condition and at a capacity suitable for the job and within the machine's lifting specification. Make sure that all hooks are positioned correctly. Lifting eyes should not be side loaded during lifting operations.

9. Be careful when removing cover plates. Leave last two diagonal bolts/nuts to prevent the cover from flying-out due to spring load or pressure in the system. Remove completely after you make sure that any tension or pressure is relieved.

10. Always use proper tools that are in good condition and suitable for the job. Be sure you understand how to use them before carrying out any work. Make sure you don't forget tools after maintenance or repair. Clean them and keep in good condition.

11. **DO NOT** damage wiring during removal operations. Be careful when reinstalling the wiring so as to avoid friction with sharp edges, rough and hot surfaces. **DO NOT** route electric cables close to fuel and oil lines.

12. Always use loader arm mechanical lock strut to block the loader arm in raised position whenever maintenance or repair work is to be done with the loader arm raised.

13. Loose or damaged fuel, lubricant and hydraulic lines, tubes and hoses can cause fire. Do not bend or strike high pressure lines. Inspect the lines, tubes and hoses carefully. Do not reinstall the items that have been bent, kinked or damaged.

14. Tighten connections with correct torque. Make sure that all shields, guards and clamps are installed correctly to avoid excessive heat, vibration, noise or rubbing against other parts during operation.

15. **DO NOT** operate a machine if any rotating part is damaged or is in contact with any other part during operation. Any high speed rotating component that has been damaged or replaced should be checked for imbalance before reinstalling.

16. When you install electronic devices such as radio, wireless, computer etc. on the machine consult the manufacturers of the components to avoid possible interference with the machine's electronic systems.

17. Use correct size, grade, type and quality of fasteners. Otherwise you will compromise safety and performance.

18. Turn the battery switch off when you stop and leave the machine after a day's work.

2.2.1. WELDING

Do not weld containers, tanks that are filled with fuel or oil.

DO NOT weld on the painted parts as this will produce harmful gases. Remove paint around the point to be welded at least in a radius of 10 cm.s.

Before performing any electric welding operation, disconnect the battery and the alternator lines. Disconnect electrical and electronic devices before welding. Attach the ground cable onto the part itself that will be welded, or as close to welding spot as possible. Do not use ground point of electrical devices as the ground point of the welder. Wear protective equipment during welding. You will injure your eyes if you observe the welding with naked eye or with a means other than an appropriate welding glass or shield. Learn about the material that you are going to weld and use appropriate welding rod. Consult Hidromek authorized dealer if you don't know. Do not touch the weld zone before the parts cool off otherwise you will burn yourself.

2.2.2. MACHINE CONTROL LEVERS

It is dangerous to operate the control levers from outside and it may cause serious injury or death. The control levers must only be operated when the operator is sitting in his seat properly, with the seat adjusted and attached to the seat.

2.2.3. VISIBILITY

Low visibility may result in accidents during work. The windows should be kept clean and lights should be turned on for proper visibility in dark. The machine MUST NOT be operated if the visibility is not sufficient. Properly adjust the mirrors for optimal visibility.

2.2.4. ROPS / FOPS STRUCTURE

This machine is fitted with a Roll Over Protective Structure (ROPS) and Falling Objects Protective Structure (FOPS) Cab. You may lose your life or be injured if you operate the machine with a damaged or missing ROPS/ FOPS Cab. ROPS / FOPS cabs should not be modified in any way.

2.2.5. SPARKS

Sparks from the exhaust or electrical installation can start fire and blast.

The machine should NEVER be operated at closed places as flammable gases or similar substances may be ignited at such places.

2.2.6. DRINKS AND DRUGS

Operating the machine under the influence of alcohol or drugs is very dangerous. NEVER drink alcoholic drinks or take drugs before or while operating the machine. If you have to take any medicine for any reason, consult your doctor and learn any side effects that might endanger safe operation of the machine.

2.2.7. FAILURE OF ENGINE OR STEERING

Immediately stop the machine in case of engine or steering failure. The machine MUST NOT be operated unless the fault has been repaired.

2.2.8. USA FEDERAL CLEAN AIR ACT

USA Federal clean air act Section 89.1003 (a) (3) (i) prohibits the following act;

“ For a person to remove or render inoperative a device or element of design installed on or in a nonroad engine, vehicle or equipment in compliance with regulations under this part prior to its sale and delivery to the ultimate purchaser, or for a person knowingly to remove or render inoperative such a device or element of design after the sale and delivery to the ultimate purchaser.”

and provides a penalty under 89.1006 (a) (2) as follows:

“A person who violates 89.1003 (a) (3) (i) is subject to a civil penalty of not more than \$2,750 or each violation.”

Therefore making changes (such as fuel system adjustment settings, engine rpm set values and so on) to an EPA-certified engines is forbidden. Otherwise your engine may end up in a state of non-conformity to EPA regulations due to non-standard emission values.

2.2.9. RECOMMENDATIONS

All maintenance operations must be done on a timely basis and in accordance with the operating and maintenance manual and service manual.

All maintenance and repair work must be done by an authorized HIDROMEK service stations and service staff who are trained on the machine to perform these operations per instructions.

Use well distilled, non-corrosive, ultra low sulfur fuel (See REQUIRED FUEL PROPERTIES table for the fuel quality in the MAINTENANCE Chapter), high cetane number fuels. These as well as fuel cleanliness are of utmost importance for efficient combustion and minimal wear with reduced emission values.

2.3. PRE-START SAFETY

Majority of failures that occur during machine operation or servicing result from neglecting fundamental safety precautions. The following safety precautions are given to avoid such failures. However, they are only a part of what you must follow. Thoroughly read, understand and follow all safety precautions given in this manual and on the machine before operating the machine.

2.3.1. OBSERVE SAFETY PRECAUTIONS

Follow all safety rules, precautions, and operating procedures. If there are other personnel and flagmen working in the area, have them observe the specified signs.

2.3.2. WEAR PROTECTIVE CLOTHING

Wear well fitting safety shoes, helmet, and working clothes, put on protective glasses, face shield, ear plugs or ear muffs and gloves as well. When necessary wear reflective vest.

2.3.3. READ and UNDERSTAND THE OPERATING MANUAL

Before operating the machine, read and understand this OPERATING MANUAL thoroughly in order to use the machine effectively and safely.

2.3.4. KEEP OPERATING MANUAL IN CABIN

Keep this manual in the operator's cab in the pocket beside the Right hand side console for quick reference. Should the OPERATING MANUAL be lost or damaged, contact your HIDROMEK Dealer to order a new OPERATING MANUAL.

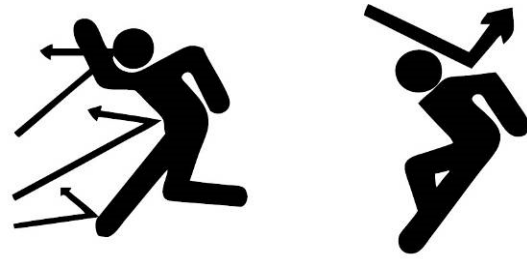
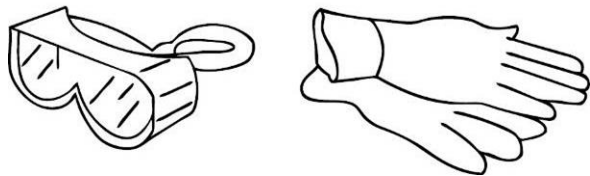
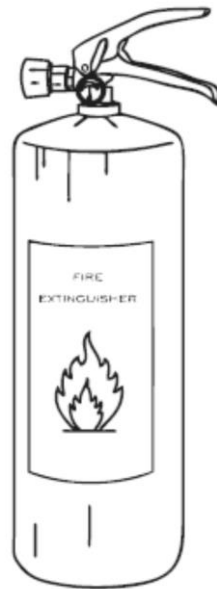
2.3.5. BE PREPARED FOR EMERGENCIES

Have a fire extinguisher and first aid kit ready for emergencies. Know how to operate the Fire Extinguisher and know where the first aid kit is located for easy access in case of emergency. It is the operator's responsibility to ensure that equipment such as fire extinguisher, first-aid box, warning triangle and reflector hazard lights are kept with the machine according to the traffic regulations valid in the user's country and that the operator has the appropriate license as required by the national traffic laws of that country.

The fire extinguisher must be maintained periodically in accordance with the applicable standards and regulations in effect.

**NOTE**

Fire extinguisher is not a standard product delivered by Hidromek when you buy the machine. Make sure you obtain one for emergencies.

**Figure 2-2****Figure 2-3****Figure 2-4****Figure 2-5**

2.3.6. SAFETY AT THE JOB SITE

Job sites are fraught with dangers. Before operating, carefully survey and record the land and job site conditions to prevent the machine from falling or the soil from collapsing. Look for pits, potholes, weak ground, hidden rocks etc. Check for utilities such as electric, telecommunication cables, gas and water piping (both overhead and underground).

Use the machine in cooperation with the jobsite organization and management who will provide coordination with operation of other machines on the same site.

2.3.7. PRE-START INSPECTION

Perform a PRE-START inspection around the machine before starting. If any trouble is found, repair immediately or consult your Hidromek Service/Dealer.

DO NOT OPERATE THE MACHINE before the problem is eliminated. ALWAYS keep the windshield, the windshield wiper, the working lamps, and mirrors clean for good visibility. Check tyre pressures and wheel nut torques.

2.3.8. SIGNS, SIGNALS & FLAGMEN

Use marks on soft banks or ground. Request assistance from a flagman if necessary. The operator should follow the warnings and signals of the flagman. Only one flagman must be in charge to avoid any confusion in signaling .

2.3.9. KEEP FIRE AWAY FROM FUEL & OIL

Oil, antifreeze, and especially fuel are highly flammable. NEVER light fire when refueling. Keep the fuel and oil caps closed. Store fuel and oil in safe storage areas. Clean up any oil or fuel spills. DO NOT use water to extinguish fire on the machine. Use fire extinguisher if needed.

DO NOT SMOKE in and around the machine!

Stop the machine and correct the problem if you notice any leak in the fuel system.

Right and rear windows are designed as emergency exit.

2.3.10. TO GET ON AND OFF THE MACHINE.

Always face the machine and maintain three point contact when getting on or off the machine. Use the handrails and steps.

Clean handrails, steps and mounting parts off the mud, grease, oil, ice, and water.

DO NOT use the control levers to get on or off the machine and the cab.

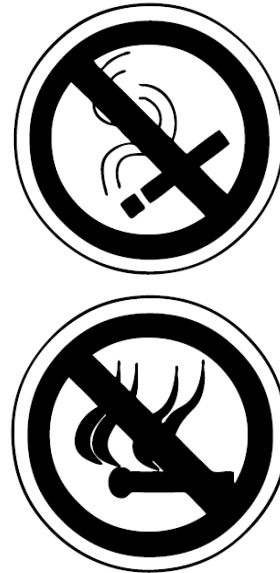


Figure 2-6

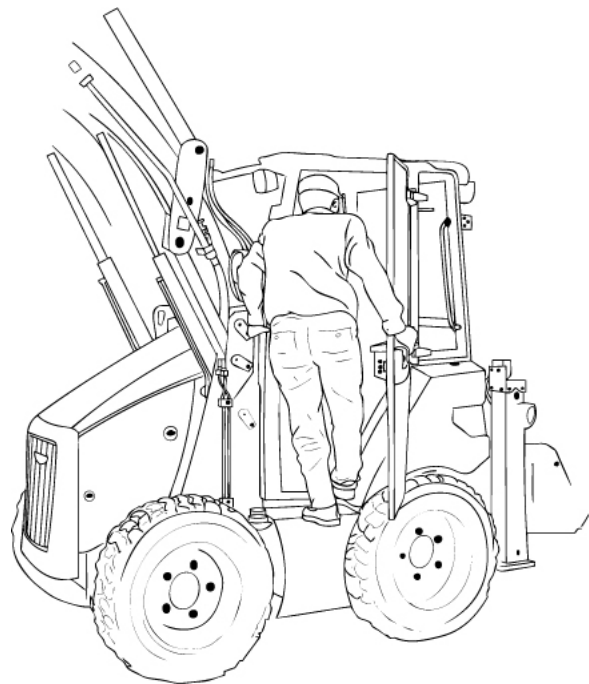


Figure 2-7

2.3.11. APPLY PARKING BRAKE BEFORE LEAVING THE MACHINE

Apply the parking brake and lower the attachments on the ground before leaving the cab. DO NOT forget to stop the engine and take the starter switch key with you. If the parking brake is not applied, the machine may move and result in serious injury or damage.

2.3.12. ENGAGE LEVER SAFETY LOCKS BEFORE LEAVING THE MACHINE

Safety locks are provided in order to enhance safety by blocking the movements of control levers of both loader and backhoe sections of the machine. Lever locks should ALWAYS be engaged before leaving the cab. The lever locks can ONLY be released whenever the operator takes the correct operating position in the cab.

**CAUTION**

Before leaving the operator's cab loader and backhoe safety locks must be engaged. The safety lock levers can ONLY be released whenever the operator takes the correct operating position in the Cab.

2.3.13. HOT SURFACES & FLUIDS

Be cautious and wear proper safety equipment when working around hot areas. Never change oil, engine coolant or filters immediately after the machine has been stopped. Allow machine to cool down before performing any maintenance procedures.

2.3.14. USE PROPER ATTACHMENT

Use only optional attachments designed, manufactured or approved by HIDROMEK.

Read, understand and follow all instructions in the manual of the optional attachment.

Use of any optional attachment not approved by HIDROMEK may cause serious injury to personnel and damage to the machine.

Contact your HIDROMEK Dealer for the optional attachments that are available for your machine.

2.3.15. PREVENTING FIRE

Loose or damaged fuel, lubricant and hydraulic lines, tubes and hoses can cause fire. Do not bend or strike high pressure lines. Inspect the lines, tubes and hoses carefully. Do not reinstall the items that have been bent or damaged. Clean lost fuel and oil. Keep fire extinguisher at an easily reachable place and learn how to use it in case of fire. If fire starts in or out of the machine use a carbon dioxide, chemical or foam fire extinguisher and call fire department immediately. Never use water.

**Figure 2-8****IN CASE OF FIRE!**

As long as practicable,

- Drive the machine to a safe location
- Lower the attachments to the ground, apply park brake
- Turn off the engine and switch the battery switch off.
- Try to extinguish the fire if possible, or call fire department.

2.4. SAFETY DURING OPERATION

Machine must be used by skilled operators with adequate training and operator's license.

Most of the accidents may be avoided by taking safety precautions and being CAUTIOUS while operating the machine.

For proper use of the machine, you must get familiar with all of the controls, lights and decals.

2.4.1. STARTING THE ENGINE

ALWAYS sound the horn before starting the engine to warn the people around. DO NOT short circuit the starter circuit or battery to start the engine. This may cause serious injury to people or damage to the electrical system of the machine.

2.4.2. PASSENGERS

This equipment is not intended or designed for transporting people. UNDER NO CIRCUMSTANCES let anybody travel on the machine or get in the bucket! Serious injury or death can result from allowing passengers on or in the machine.

2.4.3. DRIVING

Sound the horn before moving the machine.

You must obey the traffic rules in effect in your country when you are driving on public roads.

Position the attachments as seen on the picture. Avoid passing over obstacles. Should it become necessary to drive over an obstacle, lower the loader bucket to the ground and drive at extremely low speed.

DO NOT drive too close to pits or any excavated spots; BE SURE that the surrounding ground is strong enough to support the weight of the backhoe loader.

For additional stability when driving on slopes or ramps, ALWAYS keep heavier end of the backhoe loader uphill the slope.

DO NOT drive the backhoe loader while the doors and windows of the cab are wide open. Use the latch to secure the door or the window half-open if needed for ventilation.



Figure 2-9

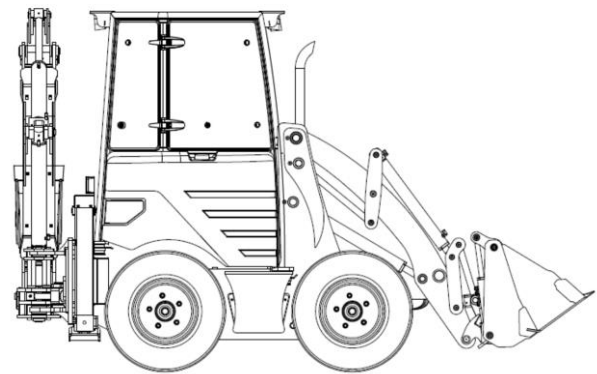


Figure 2-10

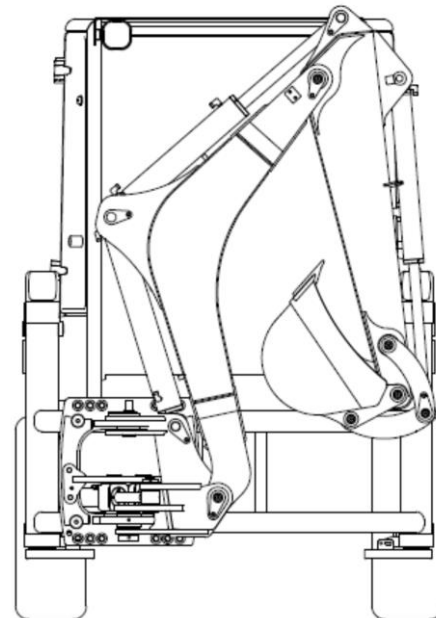


Figure 2-11

2.4.4. ROLL-OVER PROTECTION

Your machine is equipped with a cab which is Roll-Over Protective Structure (ROPS). In order to provide a ROPS protection ALWAYS fasten the seat belt that will prevent the driver from falling off the machine in case of roll-over.

If the machine tends to roll over, the operator SHOULD NOT attempt to leave the cab and MUST stay fastened to the seat for maximum protection. Otherwise he will be thrown about in the cab, may fall off and be crushed under the machine or components.

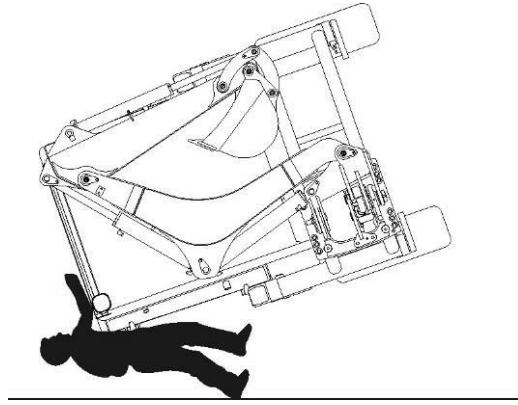


Figure 2-12

2.4.5. SLEWING

Before operating slewing controls make sure that the slewing area of the backhoe is clear of any person and objects. Sound the horn before slewing the backhoe. If necessary, ask a flagman to assist.

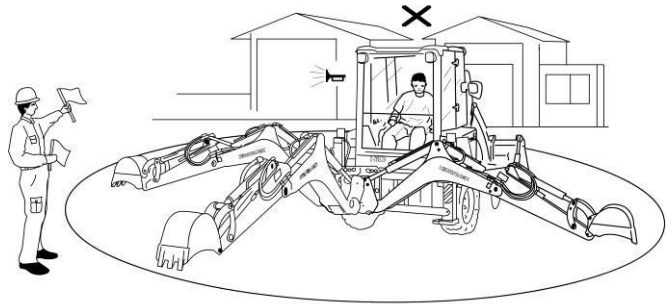


Figure 2-13

2.4.6. OPERATING ON HILLSIDES & SLOPES

Extreme care must be exercised to take proper precautions when working with the machine on hillsides and slopes as it can be dangerous. Since ground conditions may change with rain, flood, snow, ice, etc. the site must be checked thoroughly before starting the work.

NEVER move down a hill/slope with the engine shut down or the transmission in neutral.

Operation of the machine on a slope may cause the machine to become unstable.

Face uphill and downhill while working on slopes. NEVER drive the machine across an inclined surfaces as it may tip over on a side.

NEVER slew the backhoe nor steer the machine on inclined surfaces or slopes if loss of machine stability is doubted. Either grade a level area or use stabilizers to balance the machine in horizontal position. Operate control levers very slowly to prevent sudden movements that may cause the machine to slide or roll over.

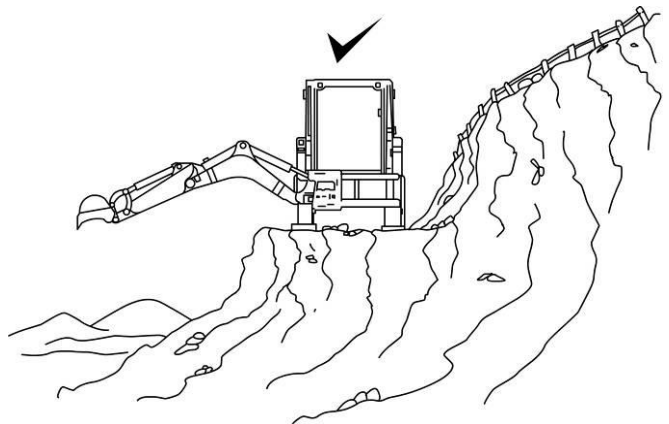


Figure 2-14

2.4.7. WORKING AROUND UTILITY LINES

If it is suspected that utility lines such as petroleum, gas, water, phone or electrical power exist in the job site, contact the local authorities to locate underground utility lines/pipes BEFORE beginning to work in that area.

Use extreme caution around electrical power lines. Keep a sufficient distance from electrical lines during operation. See below chart for minimum distances. It is your responsibility to comply with local laws and regulations regarding such working conditions.

LINE VOLTAGE	MINIMUM DISTANCE
0 ~ 50,000	5,0 meters or more
50,000 ~ 500,000	8,5 meters or more
500,000 ~ 1.000,000	12,0 meters or more

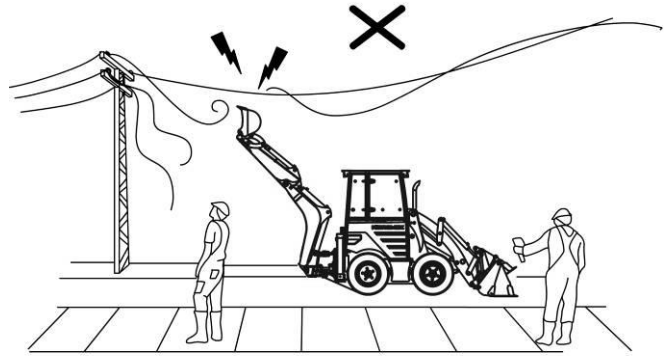


Figure 2-15



Figure 2-16

2.4.8. LIFTING

Pay attention when lifting or hoisting heavy loads. Use proper lifting equipment rated at a capacity to handle the load. DO NOT use bucket to lift or move heavy loads. When using lifting equipment such as chains, hooks, etc. the lifting capacity indicated on these equipment is not the lifting capacity of the machine. Make sure that the capacities of the machine and the lifting equipment are sufficient to support the load to be lifted.

Standard machines are not equipped for object lifting. You must use suitable lifting equipment. Do not use bucket's teeth to lift objects.

See Lifting chapter in the TECHNICAL SPECIFICATION Section for further information.

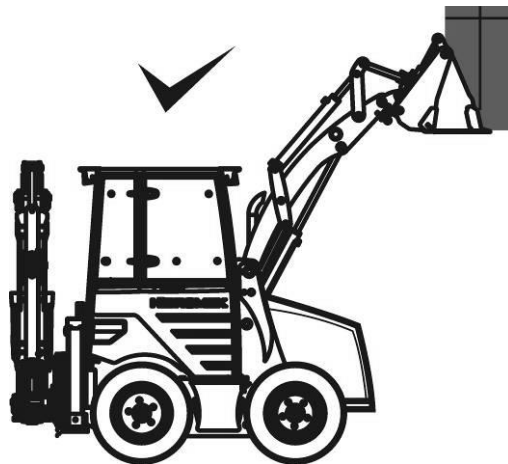


Figure 2-17

2.4.9. ICE & SNOW ON THE JOB SITES

Use extreme caution when operating the machine on icy or snow covered surfaces. Operate all Controls slowly and cautiously to prevent sudden movements that may cause the machine to slip or move in uncontrolled manner. Snow on hills or snow drifts may be hiding ditches and trenches. The machine may get stuck in or buried. It may become very difficult to control the machine under such conditions.



Figure 2-18

2.4.10. UNSTABLE GROUND OR FILLING

Be sure that ground in your work area is strong enough to carry your machine while you are working. Do not operate the attachment too close to the machine. Working of the machine at sides or fillings may result in loss of machines balance and causes danger.

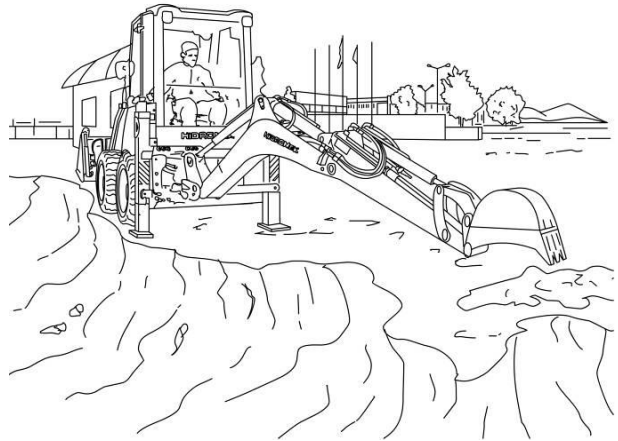


Figure 2-19

2.4.11. DANGER ZONE

It is forbidden to enter the danger zone of earth moving machines. The danger zone is the area around the earth moving machine in which persons may be injured or killed by movements of the machine, its components and attachments during operation or by swinging out or falling loads and/or loose materials.

The operator should make sure that NO person other than the work staff exists in the danger zone. The operator must give a warning signal to persons who may be in danger and stop the work if anyone remains in the danger zone.

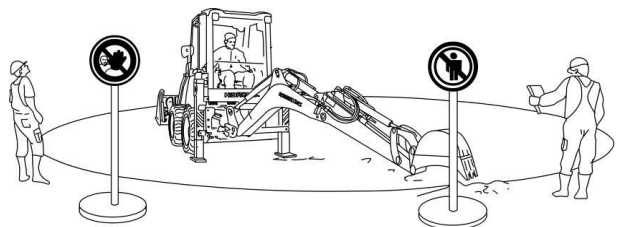


Figure 2-20

2.4.12. RESTRICTED WORKING AREAS

1. CONFINED WORKING AREAS



Figure 2-21

At job sites such as tunnels, bridges, or indoor structures, or at sites with surrounding electrical power lines and other utilities, where height and swing range is limited, use extreme caution to keep the machine and its attachment at a safe distance to prevent personal injury and damage to equipment or structure. To avoid danger of crushing, a sufficient safety distance must be kept from surrounding structures and machines.

If the job site conditions restrict the operator's view of driving and working zone, he must be guided by a flagman or the driving and access to the work area must be prohibited by a barrier.

2. TRENCHES & BACKFILL PILES

Trenches and backfill piles can collapse. NEVER operate or drive the machine very close to trenches and backfill piles as the ground can collapse and cause the machine to tip-over.



Figure 2-22

3. UNDERGROUND PIPES & CABLES

Before starting excavation, contact your local authorities of gas, water and electricity to be informed of the underground utilities at the job site. Ask the map for locations of underground lines from the local authority.

Pay extra attention to map the gas pipelines underground prior to digging. It is advisable to perform manual excavation to spot exact position of lines. Unless otherwise is proven, any pipes underground for which you are not sure must be regarded as gas pipes. DO NOT dig too close to drive on the ground over old gas pipes as they can easily be damaged resulting in gas leaks. Gas leaks are extremely explosive.



Figure 2-23

If you suspect any gas leak, immediately inform the site authorities as well as all people in the job site. Smoking at the job site should be forbidden, open lights should be turned off and all engines should be shut down in such a case.

4. WORK AT OLD SITES

It is probable that harmful substances such as asbestos and toxic chemicals could be buried in the site. Should you find such materials or containers during digging stop the machine and inform the site supervisor immediately.

5. BARRIERS FOR SAFETY

In crowded areas or where visibility is limited, machines can be dangerous for the people. Safety barriers should be used to restrict access to danger zone.

2.4.13. LEGAL LIABILITY

You (the operator and/or your company) will be legally liable should you cause damage on any public utility while working. ALWAYS keep in mind that you are responsible to spot any public utility at a job site where you might cause damage while working. Pay attention to take necessary safety measures at the job site and comply with laws and regulations of local authorities.

2.4.14. EXPERIMENTAL OPERATIONS

DO NOT give a trial go if you are not sure of successful performance of an operation in a safe manner. Death or serious injury may result from trying to do experimental operations if they were not done before. Experiments should be performed far from the job site on a clearly visible plain area. Do not allow people into the danger zone.

2.4.15. PARKING THE MACHINE

ALWAYS park the machine on a firm, level and hard ground whenever possible. If the terrain is not adequate, block the wheels and lower the attachments to the ground to block the movement of machine. Always apply parking brake once the machine is properly parked and secured.

If it is absolutely necessary to park the machine on the public road, pay attention not to obstruct the traffic. Also post reflective warning signs and markers at a safe distance from the machine. Observe all traffic rules and regulations of your country.

IDLING: Avoid extended period of idling as this will waste energy and pollute the environment

2.4.16. KEEP UNAUTHORIZED PEOPLE AWAY

Use extreme caution when dismounting an attachment when there are people around. Keep unauthorized people away from the working area while you work. Operate the controls of the machine gently when removing and installing attachments.

2.4.17. CHECK ATTACHMENT LOCK PINS

MAKE SURE you secure the attachment lock pins before starting to work in order to prevent unexpected sudden release of the attachment. Before starting to work, it is a good practice to gently pry with the attachment to check if it is properly attached and secured.

2.4.18. SECURE THE ATTACHMENTS

The attachments are heavy and may roll over when assembling or disassembling. To prevent the attachment from rolling over, block and secure all attachments that are dismounted. Keep away unauthorized people when assembling or disassembling the attachments.

2.4.19. VENTILATION IN CLOSED AREA

MAKE SURE there is adequate ventilation when operating the machine in a closed area. Exhaust gases include fatal components that are odorless and invisible so that you may pass out and get killed.

2.4.20. EMERGENCY EXIT

Use left hand side door of the cabin to get on and off the machine.

Right hand side window is designated as emergency exit. The rear window can also be used as an emergency exit.

NEVER store material that will block or restrict the emergency exits of the operator's cabin.



Figure 2-24



Figure 2-25

	CAUTION
This machine is not suitable for use in closed areas such as mines it may be operated only after adequate protective measures such as cabin ventilation and cab protection grid are provided.	

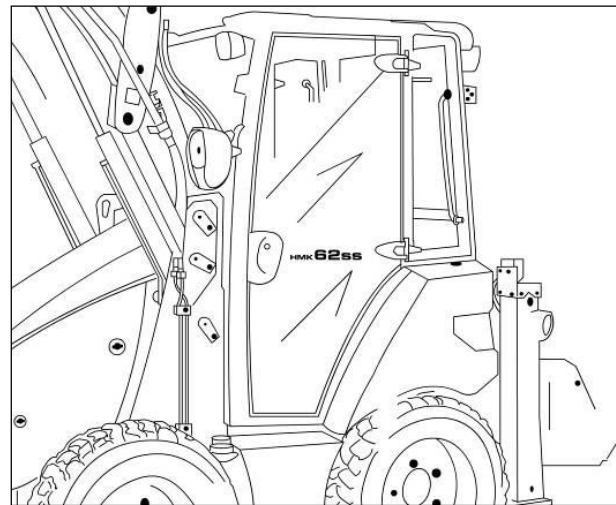


Figure 2-26

2.4.21. UNINTENTIONAL SHUT-OFF DURING OPERATION

Should the engine shut-off during work and could not be re-started, DO NOT panic, the attachments can be lowered down to ground with their own weight by moving the control levers to relevant positions. Lower the attachment as far as the site conditions permit. Check for people and other equipment in the danger zone before lowering the attachment. Inspect the engine or have service staff correct the problem.

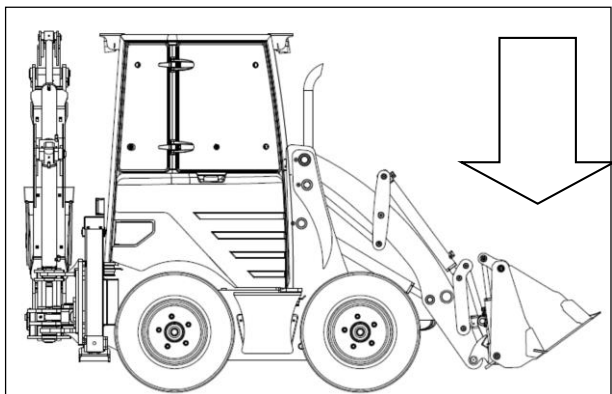


Figure 2-27

2.5. INSPECTION & MAINTENANCE SAFETY

Any maintenance job must be carried out by an approved HIDROMEK Service Dealer who are trained and qualified to perform the task. NEVER try to perform a service operation you do not know. Call HIDROMEK Authorized Dealer to have the job done.

2.5.1. PREVENT UNAUTHORIZED START

Before performing any repair or maintenance on the machine, attach a "DO NOT OPERATE" tag to steering wheel prevent inadvertent starting of the machine. Take the starter key with you if you have to leave the operators post. Also, inform the site supervisor and all operators, and make it visible that the machine is under repair or maintenance.

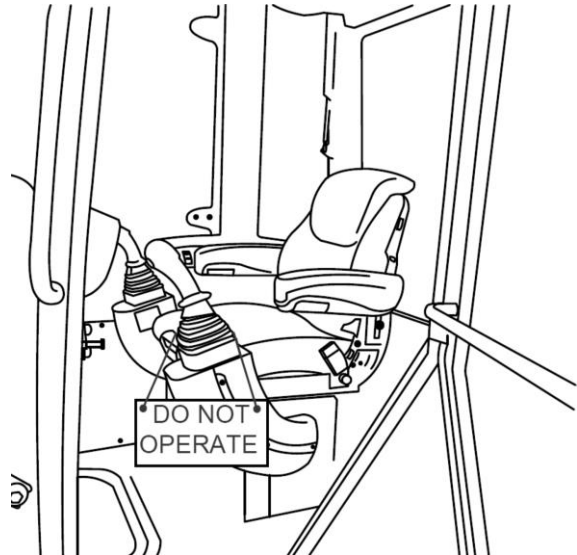


Figure 2-28

2.5.2. STOP THE ENGINE BEFORE SERVICING

Make sure that you switch the starter key off and apply the parking brake (parking lever pulled up) before starting any repair or maintenance. Accidentally starting the machine is dangerous and may cause fatal injury.

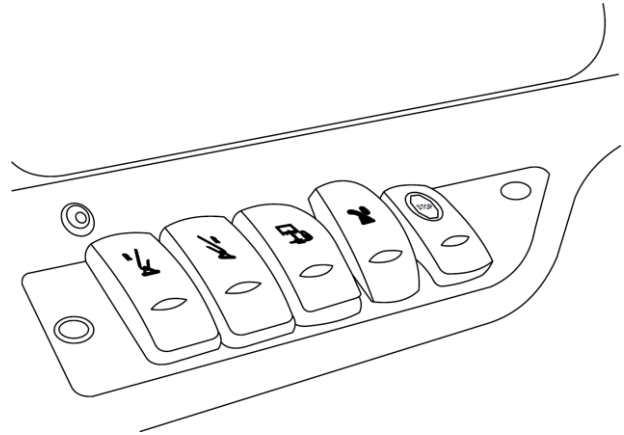


Figure 2-29

2.5.3. ENGAGE CONTROL LEVER SAFETY LOCKS

MAKE SURE that you ENGAGE Control Lever Safety Locks prior to servicing the machine. Failure to engage lever safety locks may result in serious injury or death.

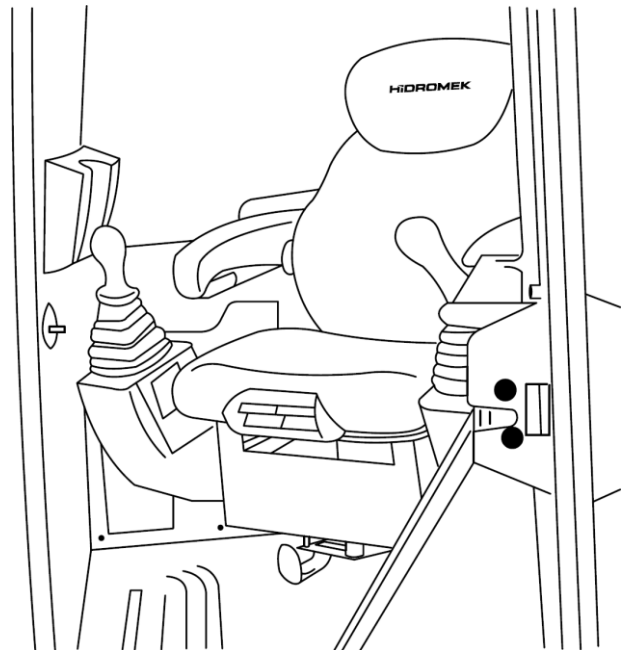


Figure 2-30

2.5.4. ENGAGE ATTACHMENT LOCKS

During maintenance or repair, front and back attachments have to be locked so as to prevent their sudden movements.

2.5.4.1 FRONT ARM SAFETY STRUT

In case it is necessary to carry out maintenance operations or to hold the machine with the loader arm raised, always engage the safety strut.

⚠ WARNING

Before working with the loader arm raised, always engage the safety strut. Serious personal injury or death may result if the loader arm is not blocked in the raised position. The loader arm may drop suddenly and crush people and objects underneath.

⚠ WARNING

Inspect attachment safety locks for excessive wear and damage. Replace if necessary.

2.5.4.2 BACKHOE LOCK

A mechanical lock is provided for locking the backhoe to the side shift frame on the left or right hand sides, and preventing it from falling down and turning.

⚠ WARNING

Before traveling on the road, always engage the backhoe attachment lock to prevent accidental operation of the backhoe boom. Serious personal injury may result from neglecting to lock the backhoe attachment as it may drop or slew suddenly.

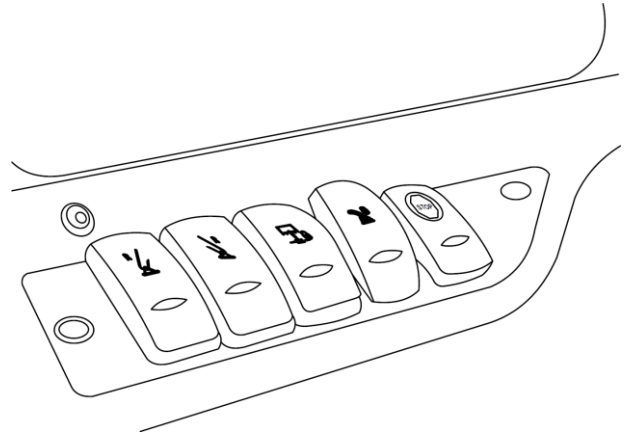


Figure 2-31 - Hydraulic clamping and control lever lock switches

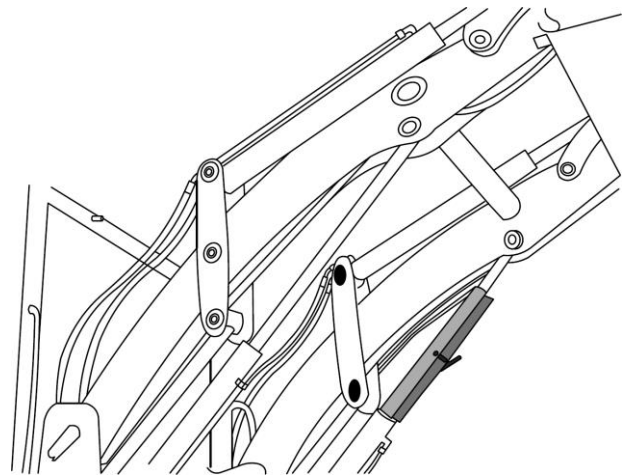


Figure 2-32 - Loader Arm Safety Strut

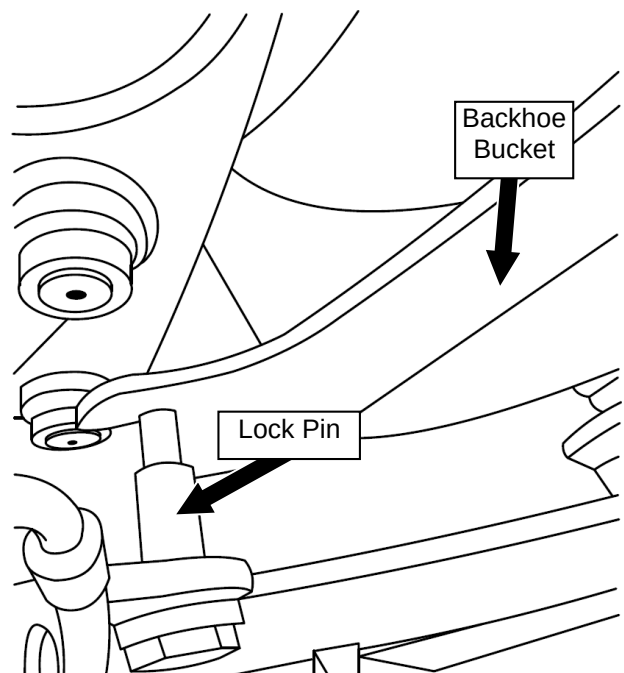


Figure 2-33 - Backhoe Lock

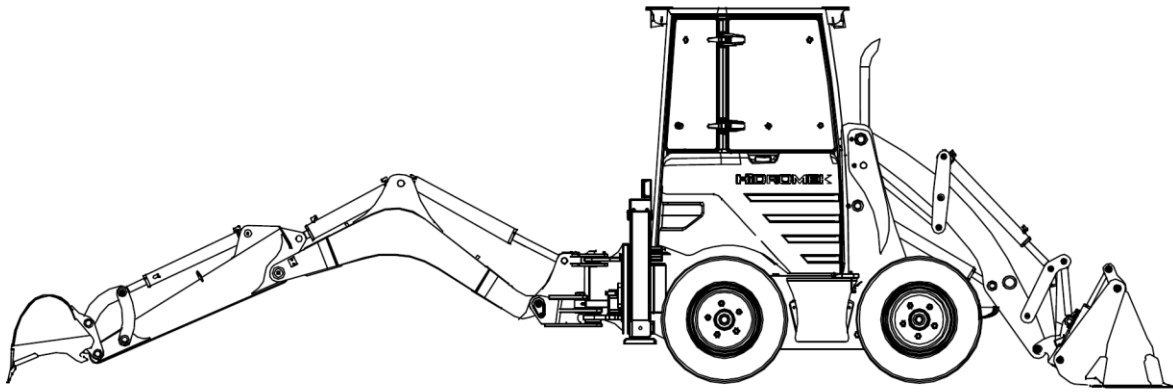


Figure 2-34

2.5.5. MAINTENANCE POSITION

ALWAYS set the machine in the position shown in the figure above before performing any inspection or maintenance. If this is not possible, secure loader arm and backhoe attachment by the safety locks. Always lower the attachments on the ground & apply the parking brake before leaving the operator's cab.

2.5.6. KEEP THE MACHINE CLEAN

Keep the machine clean and free of dirt, mud, spilled lubricant, fuel and fluids. Use approved solvents, detergents and water to clean the machine. Follow manufacturers' safety instructions while using detergents and chemicals during cleaning.

Do not wet the electrical components. Otherwise a serious damage may occur at the electrical system.

NEVER wash inside of operator's cab or electrical components by pressurized water or steam.

2.5.7. PRESSURIZED FLUIDS

ALWAYS release pressure from hydraulic, engine coolant and fuel system before removing caps or dismantling any components. Lower the working attachments on the ground and move the hydraulic control levers until there is no pressure left in the hydraulic system. Allow enough time for the systems to cool down before performing any job.

! WARNING

The hydraulic accumulator is pressurized even when there is no hydraulic pressure in the system. Do not dismantle the hydraulic accumulator by any means such as cutting, pressing, welding, etc. Dismounting the accumulator without releasing the nitrogen gas pressure may cause injury or death.

! WARNING

Always release the trapped pressure when disassembling hydraulic components such as quick couplers and hose rupture valves.

2.5.8. SUPPORT THE MACHINE

If it becomes necessary to raise the machine for inspection or maintenance, always support the machine by positioning the machine as shown in the figure above and use safety supports or blocks to support the machine.

STOP DANGER

Never inspect or perform maintenance under machines that are not supported properly. Working under raised machines which are only raised by the hydraulic jacks or by their own hydraulic attachments is dangerous and strictly forbidden.

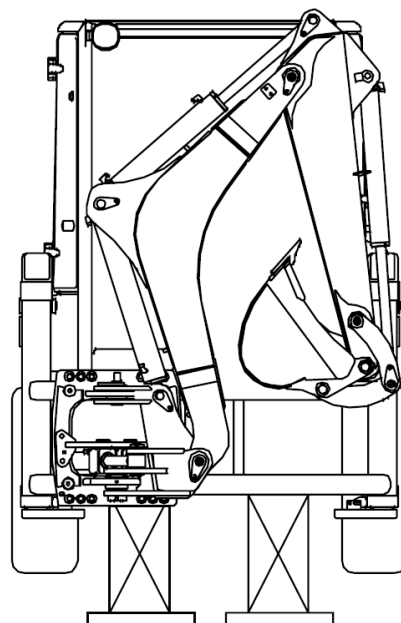


Figure 2-35

2.5.9. REFUELING

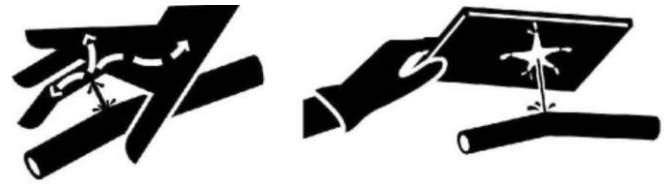
Move the machine to a well ventilated area for refueling. Use ONLY specified fuel as described in the MAINTENANCE chapter of this manual. Clean up any spilled fuel. Tighten the fuel cap securely after refueling.

Hold the fuel gun in constant contact with the filler chassis throughout the filling process. This will avoid sparking due to static electricity.

Do not fill the tank completely. Allow space for the fuel to expand. Do not smoke, do not use your mobile phone while refueling.

**Figure 2-36****2.5.10. HYDRAULIC PRESSURE**

Hydraulic system of the machine is pressurized. DO NOT use your hands to check for hydraulic leaks. Use a small piece of cardboard, plywood or similar material close to suspected area when inspecting for leaks. Leakages may cause fine jets of oil under high pressure which may penetrate into your skin. Keep your face away from the leakage area. Get medical aid if your hand or face is affected.

**Figure 2-37****2.5.11. TYRE INFLATION & WHEEL NUTS**

Tyre services should be performed by qualified service centers or by authorized technicians who are properly trained and who have safety equipment. The rims and tyres used on this machine requires that special care must be taken to prevent accidents.

- NEVER over inflate the tyres.
- NEVER weld on a wheel or rim.

⚠ WARNING

Tyre or wheel components may cause serious injury or death when they burst. Always observe the safety rules. DO NOT stand by the rims while you inflate the tyre. Stand behind an object or behind the tread of the tyre. Use long hose with safety chuck.

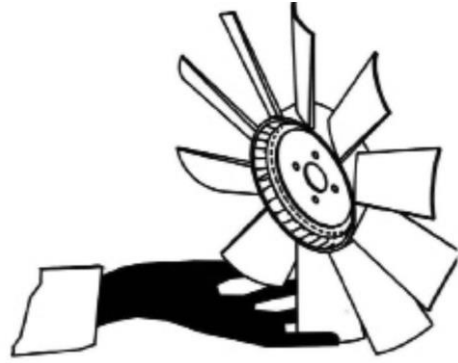
Check wheel nut torque before starting the machine at every shift within the first 50 hours of operation.

**Figure 2-38****⚠ WARNING**

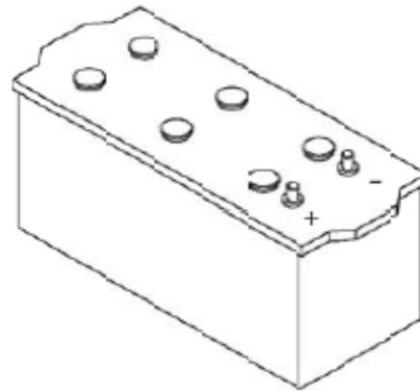
If wheel nuts are broken or damaged, replace all as a kit since the others may be overstressed.

2.5.12. ROTATING PARTS IN THE ENGINE

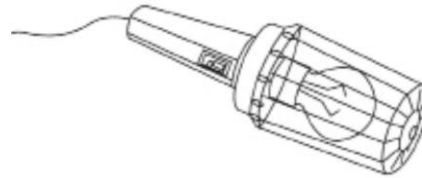
When performing any inspection or maintenance DO NOT wear loose clothing or jewelry as they may be caught in the rotating parts or linkages of the engine. Keep your hands, hair, feet, and clothing away from moving parts. Protective components of the rotating equipment/parts may only be removed after the rotation of the part is completely stopped. Protective components such as engine/motor covers, doors, bonnet and guards must be reattached properly after maintenance or repair work.

**Figure 2-39****2.5.13. ELECTRICAL SYSTEM**

When repairing the electrical system, disconnect the battery in order to cut off the circuit. Disconnect first the negative (-) earth black cable and then the positive (+) red cable. For reconnection (+) positive cable is to be connected first, then connect the earth (-) cable. Disconnect the battery leads and the alternator lines before arc welding.

**Figure 2-40****2.5.14. SAFE LIGHTING**

Use only 12 V wire cage light when performing maintenance and servicing to avoid risk of explosion or fire.

**Figure 2-41****2.5.15. WASTE MATERIALS**

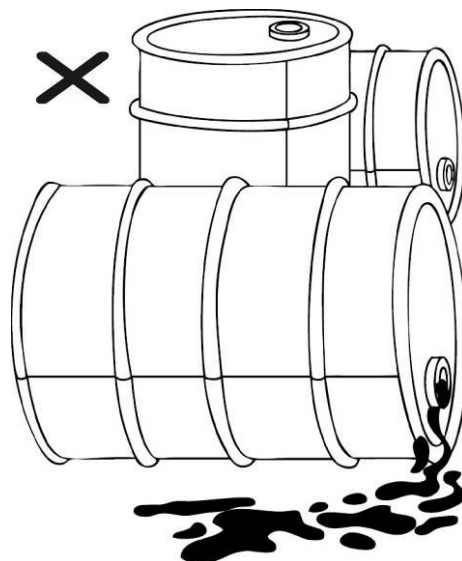
Dispose of lubricants, fuel, coolant, solvents, filters, batteries etc. in accordance with country, state and local laws, codes and regulations. Contact local authorities for proper disposal methods of such materials. Be careful for asbestos material as it is harmful and can cause cancer or lung disease when its dust is inhaled.

2.5.16. CLEANERS

Follow the instructions of the manufacturer and perform all safety inspections during using solvent, cleaners or any other chemical products.

2.5.17. SEALS

Improperly located o-rings or seals can cause leakages may cause loss of performance and accidents. Such parts should be replaced with new ones during reassembly unless stated otherwise in technical document.

**Figure 2-42**

2.6. BATTERY SAFETY

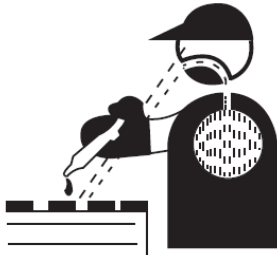
- Do not smoke near the battery or approach with open flame or spark. There is a danger of explosion due to gases accumulated.
- Avoid contact of battery poles with metal objects or belongings. There is risk of injury and burns.
- Do not shake battery or tilt; electrolyte may leak out.
- Wear safety glasses and protective clothing.
- When removing a battery first disconnect the ground cable.
- When installing a battery, connect positive cable first to avoid risk of sparking.

⚠ WARNING

Battery electrolyte is toxic and corrosive. Avoid contact with eyes and skin. Wash with plenty of water and seek medical help if it gets in the eyes or skin. When the battery is charged, a mixture of hydrogen and oxygen is produced. This gas is explosive, therefore avoid any open flame or spark around the battery. Turn off the charging source before disconnecting the charging line. The area must be ventilated properly.

2.6.1. WEAR PROTECTIVE EQUIPMENT

The battery electrolyte is an acid and will cause severe burns if spilled on your body. Flush hands and eyes with plenty of fresh water and ask for medical help immediately. Wear overalls, gloves and goggles or face shields when working with the batteries.

**Figure 2-43****2.6.2. KEEP AWAY FROM FIRE AND FLAMES**

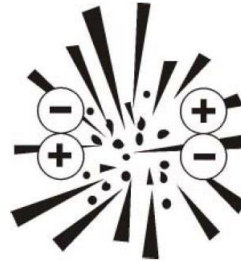
Keep the batteries away from any source of fire, flame or spark and **DO NOT SMOKE** when working with batteries. Highly explosive hydrogen gas is produced by the electrolyte (acid) in the batteries. **ALWAYS** work in a well ventilated area.

⚠ WARNING

Do not overcharge the battery.
Do not disconnect the battery while the machine is running.
Do not add acid to the battery as it will foam and overflow.

2.6.3. CHARGING BATTERY

Charge the battery in a well ventilated area. When charging, remove the cell caps to allow the reaction gases to escape. **BE CAREFUL NOT TO inhale** the vapor from the battery. Wear adequate safety equipment when working with or around batteries. **DO NOT** charge a frozen battery as it may explode. **ALWAYS** keep the battery charged and protect it against freezing.

2.6.4. STARTING WITH A BOOSTER BATTERY**Figure 2-44**

MAKE SURE the machine is properly parked and parking brakes applied. All controls must be switched off and attachments lowered to the ground. If it is necessary to hold the loader arm raised install the safety strut. Make sure that the capacity of the booster complies with 12 Volt negative chassis system of your machine. Use of a booster source with a higher voltage may damage the electrical system. Put the gear lever and the Forward/Reverse controls to **NEUTRAL**.

*Observe safety rules and wear safety equipment when starting with booster cables. Make sure you don't wear loose clothing and anything that may be caught by the rotating parts.

*Avoid two machines contact each other during boost starting.

*Connect the batteries in parallel; positive terminal of the booster source to positive terminal of the battery, and negative terminal to negative similarly. **DO NOT** connect the booster source directly across the starter motor terminals. The machine may move and cause an accident.

* When connecting the booster cables pay attention to connect the positive cable between the batteries first and then the negative or ground cable to chassis.

* Start the engine with ignition key in the cab.

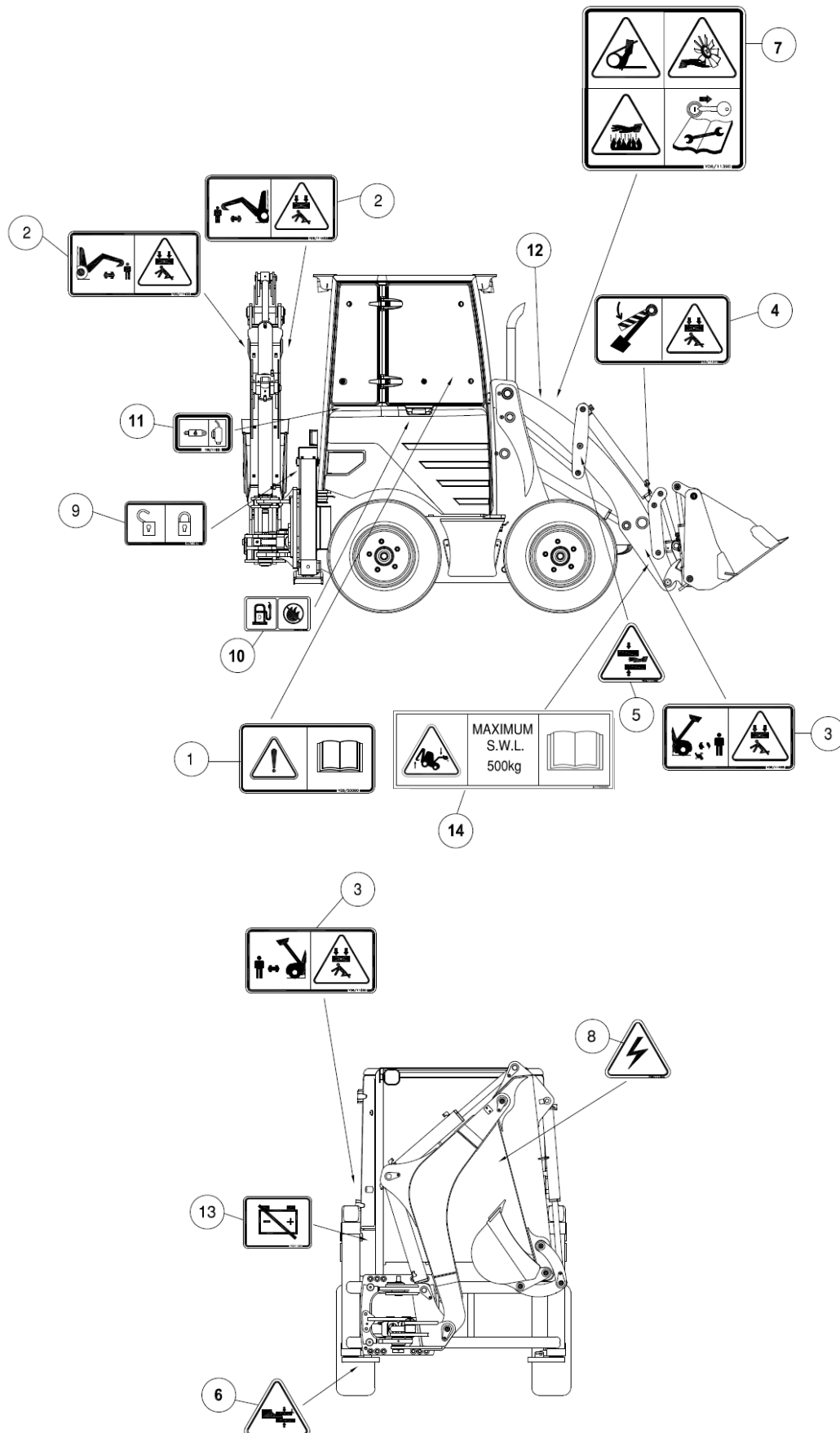
* After the engine has started, first disconnect the negative (ground) jump lead of the booster battery, then the positive cable between the two batteries.

* Maintain the battery as usual.

⚠ WARNING

Connecting a fully charged booster battery to a fully discharged battery may cause current surge and result in explosion.

2.7. WARNING LABELS & DECALS



LOCATION OF SAFETY SIGNS AND DECALS ON HMK MINI BACKHOE-LOADERS

Warning labels and decals are affixed to certain areas of the machine to remind safety precautions. You may be injured if you do not obey the instructions and safety warnings indicated on the labels and decals.

Keep labels and decals clean. Replace unreadable or missing decals with new ones. Make sure replacement parts list includes the warning labels and decals.

The following are illustrated examples of all warning labels and decals along with their locations.

2.7.1. “READ THE OPERATING AND MAINTENANCE MANUAL” WARNING LABEL

This warning decal is located in the operator's cab.

Part Number Y06 / 50090



2.7.2. “KEEP AWAY FROM WORKING AREA” WARNING FOR BACKHOE

This warning decal is located on either sides of the boom..

Part Number

Y06/11450 (Left Side)

Y06/11455 (Right Side)



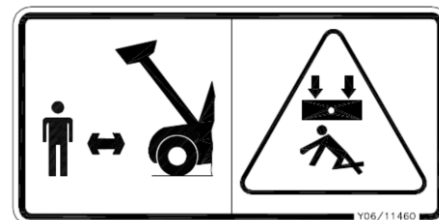
2.7.3. “KEEP AWAY FROM WORKING AREA” WARNING FOR LOADER

This warning decal is located on either sides of the loader arm.

Part Number

Y06/11460 (left side)

Y06/11465 (right side)



2.7.4. "LIFT CYLINDER LOCK" WARNING

This warning decal is located on the lift cylinder mechanical lock.

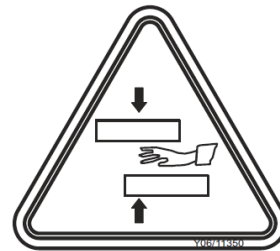
Part Number Y06 / 11370



2.7.5. "DO NOT PINCH YOUR HANDS" WARNING

This warning decal is located on the outer sides of intermediate levers of loader arm.

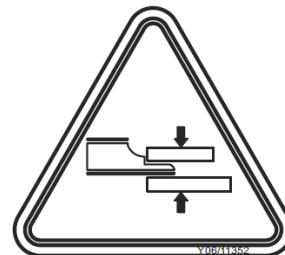
Part Number Y06 / 11350



2.7.6. "DO NOT PINCH YOUR FEET" WARNING

This warning decal is located on the stabilizers.

Part Number Y06 / 11352



2.7.7. "BEFORE PERFORMING ANY MAINTENANCE or INSPECTION STOP THE ENGINE, REMOVE IGNITION KEY AND READ OPERATING MANUAL" WARNING FOR ROTATING AND HOT PARTS AND SURFACES.

This warning decal is located on the sides of front casting.

Part Number Y06 / 11390



2.7.8. "ELECTRICAL EQUIPMENT" WARNING

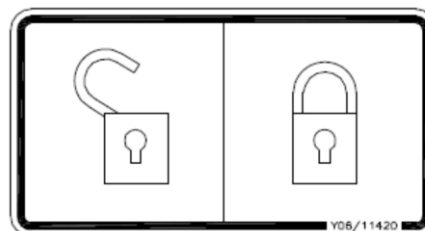
This warning decal is located on frontal part of the right hand side console over fuse box and main-board covers.

Part Number Y06/11340

**2.7.9. "BACKHOE LOCK" WARNING**

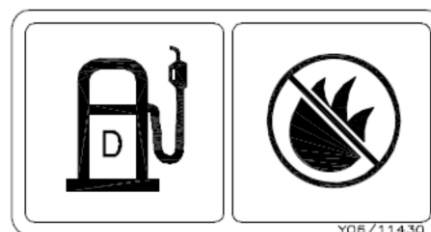
This warning decal is located on the left hand side of backhoe upper side-shift frame.

Part Number Y06 / 11420

**2.7.10. "FUEL TANK" CAUTION**

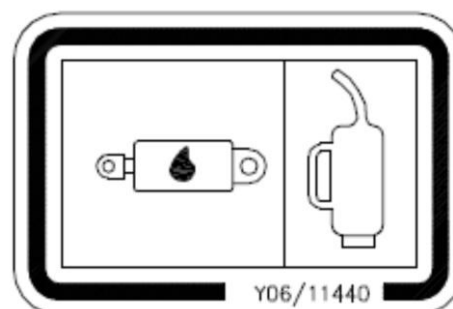
This caution decal is located on the fuel tank.

Part Number Y06 / 11430

**2.7.11. "HYDRAULIC OIL TANK" CAUTION**

This caution decal is located on the hydraulic oil tank.

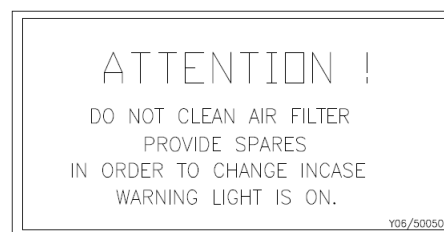
Part Number Y06 / 11440



2.7.12. "AIR FILTER CLOGGED" LABEL

This warning label is located on the air filter and can be seen when the hood gets opened.

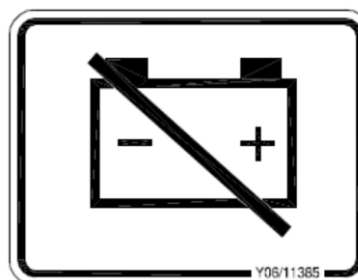
Part number Y06 / 50050



2.7.13. "BATTERY CUT-OFF RELAY" WARNING LABEL

This warning label is located on the fuse and relays box cover.

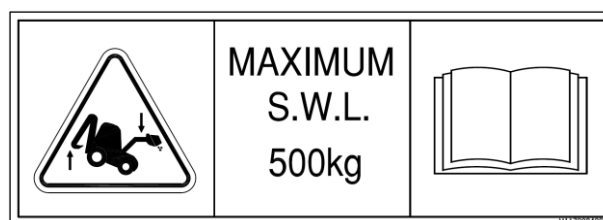
Part number Y06 / 11385



2.7.14. "SAFE WORKING LOAD" LABEL

This warning label is located on both side of the loader arm.

Part number Y06 / 11471



2.8. PROHIBITED MACHINE OPERATION

The following examples of the operating mistakes should NEVER be attempted even by the skilled operators. Misuse of this machine and its attachments can result in serious injury, death, also severe equipment damage and may reduce service life of the machine. Under no circumstances should any of these operations be attempted otherwise the warranty claims will be invalid. Use common sense and follow proper operation procedures found in this operating manual while operating this equipment.

2.8.1. DO NOT USE THE SLEWING FORCE OF THE BACKHOE FOR GRADING

Using the slewing force for grading develops excessive forces on the structure of the machine as well as on backhoe and telescopic dipper.

Do not stop the movement of the bucket by hitting to flanks or sides of a trench or a heap. You will damage the machine

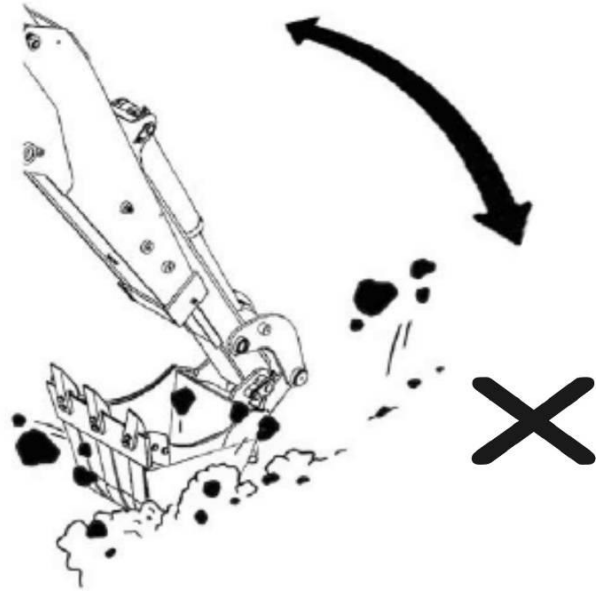


Figure 2-45

2.8.2. DO NOT HAMMER WITH THE BUCKET

Performing operations such as hammering and piling will cause extensive damage to the machine and its components.

NEVER use the backhoe bucket or the loader bucket like a hammer to drive anything into the ground.



Figure 2-46

2.8.3. NEVER USE THIS MACHINE OTHER THAN ITS INTENDED USE

This machine is designed and manufactured mainly for digging and loading operations .

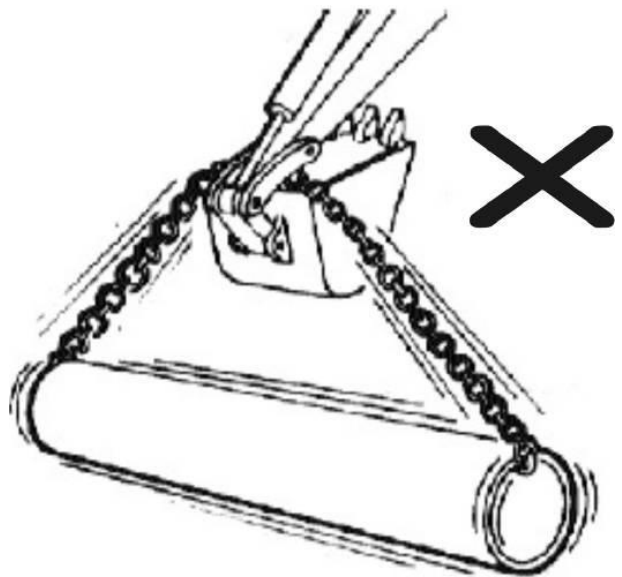
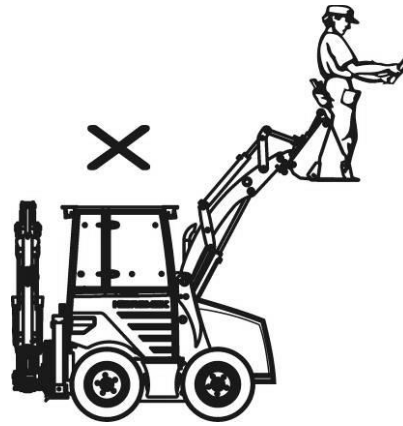


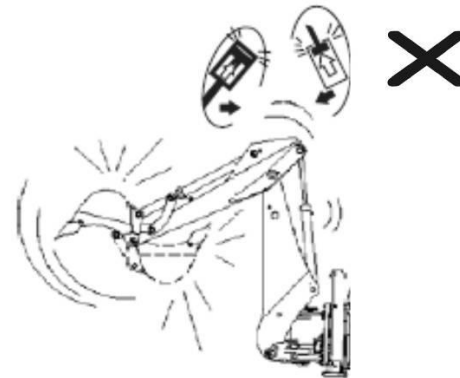
Figure 2-47

2.8.4. DO NOT USE THE BACKHOE LOADER FOR LIFTING PEOPLE

DO NOT use the backhoe bucket or the loader bucket to transport or lift people up. Failure to observe this may result in personal injury or death. Transporting passengers even in the cabin on public roads is forbidden.

**Figure 2-48****2.8.5. DO NOT IMPACT HYDRAULIC CYLINDERS TO STROKE END REPEATEDLY**

The Hidromek hydraulic cylinders have hydraulic cushioning system at the end of its stroke (except backhoe bucket opening end) to avoid damaging shocks. Extending and retracting backhoe bucket or loader bucket cylinders to stroke ends to clean debris from the bucket will exert excessive force on the cylinders resulting in cylinder damage. Overheating of hydraulic oil may also take place. Remove residual material from the backhoe and loader bucket manually or by using pressurized water.

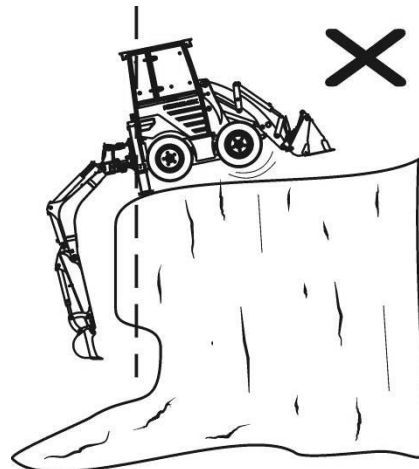
**Figure 2-49****2.8.6. NEVER EXCEED THE CAPACITY OF THE MACHINE**

Be familiar with the limits of the machine and its attachments and operate the machine within those specifications.

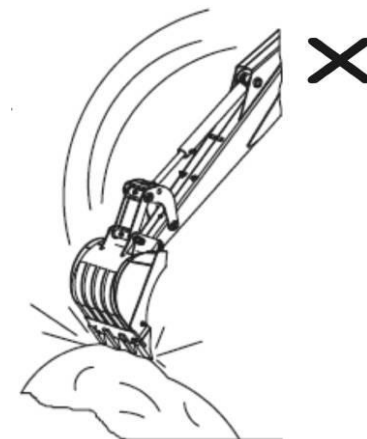
Choose the correct attachment for the job. Do not use an oversized backhoe or loader bucket for a hard bank material. It can overload the machine and shorten its service life.

NEVER tip or raise the machine to gain power to pull out the material. This could cause damage to the machine and its components, and could result in serious injury or death.

The machine can dig beyond the stabilizers seating (fulcrum) plane. Be careful as the ground may collapse if digging goes too far under the machine.

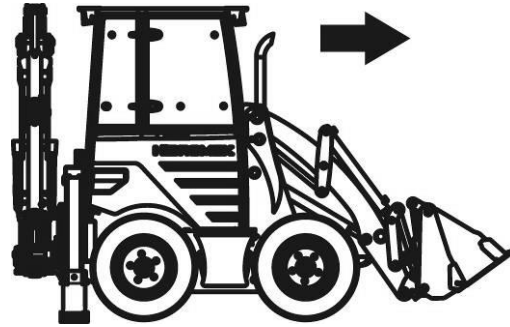
**Figure 2-50****2.8.7. DO NOT USE BUCKET TO BREAK OR CUT**

Performing operations such as breaking and cutting will cause extensive damage to the machine and its components like bucket, bucket teeth and pins especially. Do not use bucket (loader or backhoe) teeth to break or cut objects. Such operations can also cause serious injury or death as well as damage to the machine.



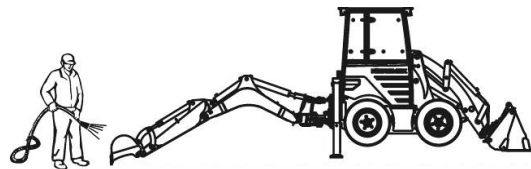
2.8.8. DO NOT DRIVE WITH THE STABILIZERS EXTENDED

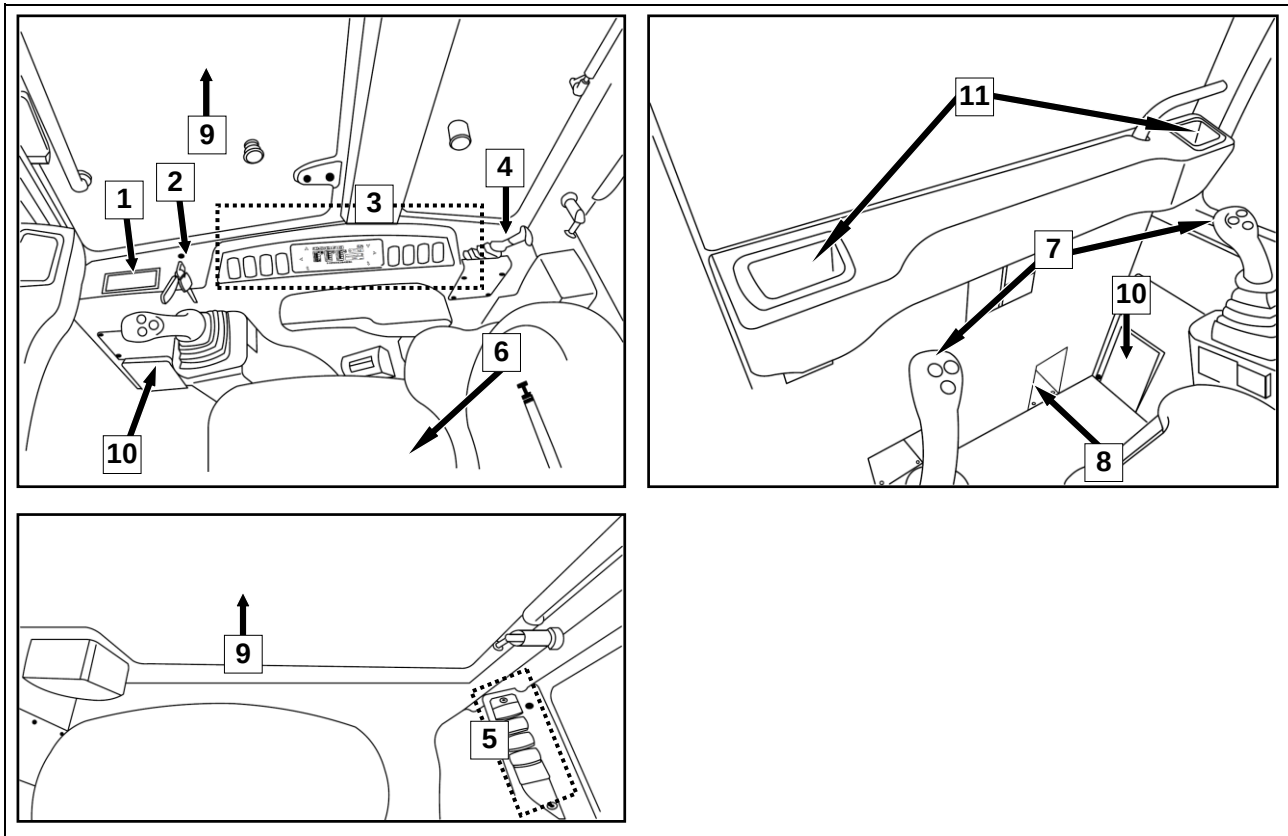
Do not forget to retract the stabilizers after completing backhoe work. Normally an audible warning will sound if the machine is driven with the stabilizers extended. Attempting to drive the machine with the stabilizers extended may cause damage to the machine and result in accidents.

**Figure 2-51****2.9. END OF WORKSHIFT MAINTENANCE& INSPECTION**

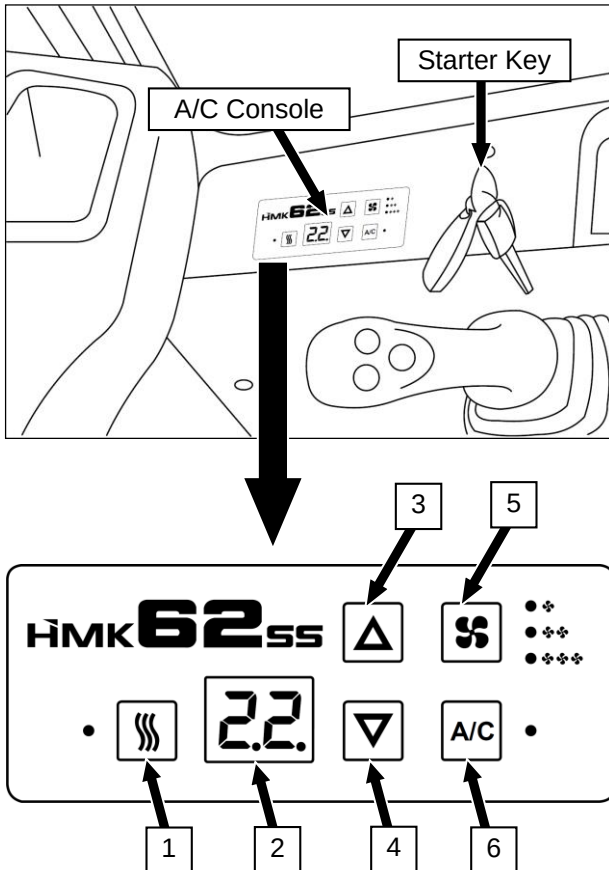
Perform all of the following procedures after the end of each shift to ensure that the machine is in optimal operating condition for the next shift or job site.

1. Move the machine to a firm, level surface.
2. Lower front and rear attachments to the ground.
3. Refill fuel tank to "FULL" mark to reduce air volume and condensation (moisture). This will decrease the possibility of freezing in the fuel tank, rusting due to moisture and other problems associated with start up and operation.
4. Close and secure all windows into their places to prevent water or moisture reaching the electrical components of the machine.
5. Thoroughly clean and inspect the machine. Perform lubrication, maintenance and repair or replace any problematic areas found before restarting the backhoe loader.
6. If machine is run in a very cold region then take off the battery at end of the shift. And keep it in a well ventilated warm area. Before the shift, plug the battery to the machine again. This will make battery's life longer. Keep the batteries always good charged.
7. Take out the starter key, close and lock all the doors and covers.

**Figure 2-52**

3. DESCRIPTIONS**Figure 3-1**

- | | |
|----------------------------|------------------------------------|
| 1. A/C console | 7. Control levers (Joysticks) |
| 2. Starter key | 8. Throttle pedal |
| 3. Right hand side console | 9. Extensible Windows |
| 4. Hand throttle | 10. Relay, Fuse and main board box |
| 5. Left hand side console | 11. Heater & A/C vents |
| 6. Operator's seat | |

3.1. A/C CONSOLE**Figure 3-2**

1. Heater ON-OFF Switch
2. Digital Display
3. Temperature Increase Switch
4. Temperature Decrease Switch
5. Fan Speed Control Switch
6. A/C ON-OFF Switch

The switches on the A/C panel are shown in the figure. The Heater switch (1), A/C switch (6) and Fan Speed Control switch (5) control the A/C system on the machine.

Conditioned air enters the operator's cab from the vents. To increase the effectiveness of the A/C close all windows and doors and pay attention to set the engine approximately 1500~2000 rpm.

1. Heater ON-OFF Switch

Press the button to turn ON the Heater. When pressed, it's lightning.

2. Digital Display

Shows temperature that adjusted by temperature increase and temperature decrease switches.

3. Temperature Increase switches

Press switch (3) to increase the temperature.

4. Temperature Decrease Switch

Press switch (4) to decrease the temperature.

NOTE

For convenient heating, the engine must be warm enough and the temperature should be adjusted as needed in order to provide warm air flowing from the ducts into the cabin.

5. Fan Speed Control Switch

Fan speed control switch is located on the A/C panel and controls the fan. Fan operates with heater and air conditioner. If heater and A/C switches are turned off, it only circulates the air.

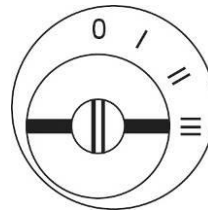
The fan switch has three operating functions.

0. OFF
1. Low speed
2. Medium speed
3. High speed

Use the high speed mode especially to defrost the fog on the front window in a short time. Fan gives fresh air to the operator's cab.

6. Air Conditioner (A/C) ON-OFF Switch

Press the button to turn ON the A/C. When pressed, its lightning.

**Figure 3-3****3.2. STARTER SWITCH**

This is a 4-position switch as seen in the figure. Removal of starter key is possible only when the switch is at "0" position.

"0" OFF / ENGINE STOP

Turn the key to stop the engine. The transmission should be at neutral position, all of the attachments must be lowered and the parking brake must be applied prior to stopping the engine.

"I" ON

Battery electric power is supplied to the electrical system. (The electric power is directly fed to the parking lights and hazard warning lights.)

"II" PRE-HEATING POSITION

In cold weather conditions when the starting is difficult, hold the starter key in this position for a duration of not longer than 15 seconds to warm up the combustion chamber.

"III" START POSITION

The starter motor runs to start the engine when the key is turned to this position. Do not run the starter motor more than 20 seconds if the engine does not start. Allow the starter motor to cool down for at least 2 minutes before the next starting attempt.

3.3. RIGHT HAND SIDE CONSOLE

Gauges, warning lights and control switches that are essential for operating the machine are located on the right hand side console. The symbols on the switches are illuminated when switches are turned ON. A red bar on the switches comes on to indicate that it is "ON".

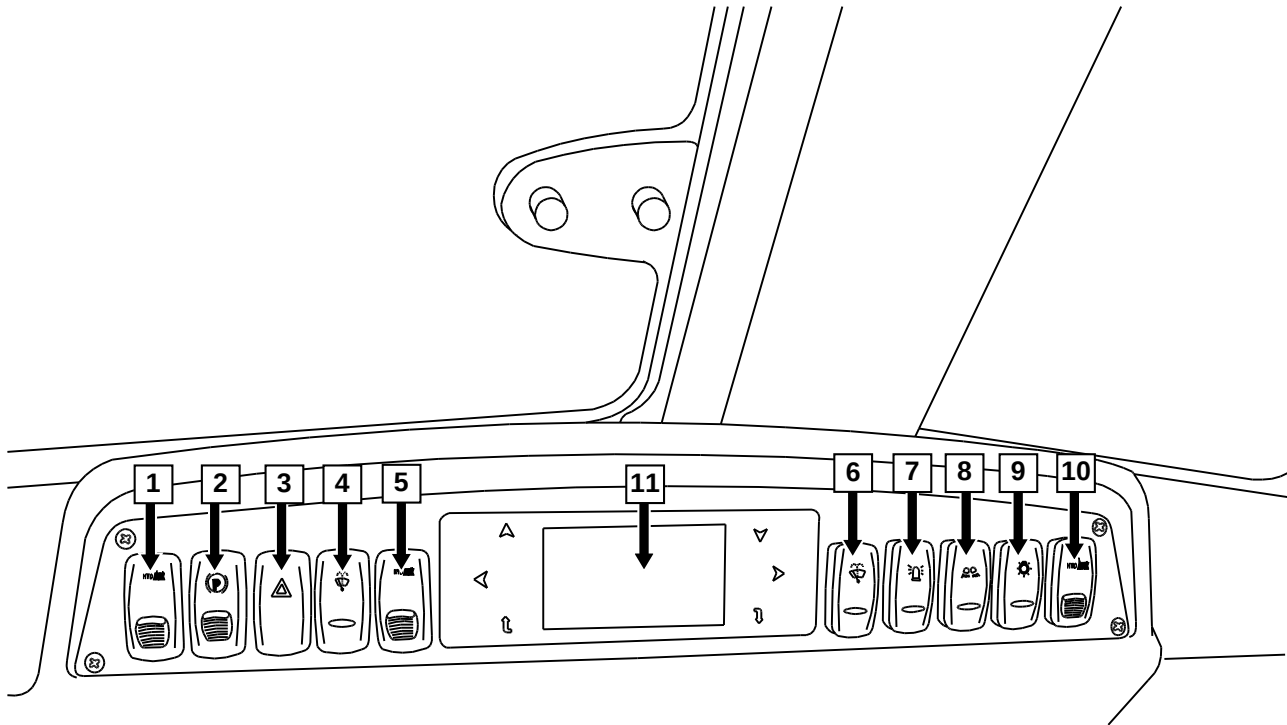


Figure 3-4

- | | |
|---|---|
| 1. Front Attachment Switch | 7. Rotating Beacon Switch |
| 2. Parking (Hand) Brake Switch | 8. Front & Rear Working Lights Switch |
| 3. Hazard Warning Light Switch | 9. Headlights & Tail Lights Switch |
| 4. Front Window Wiper And Washer Switch | 10. "Dig&Travel" / "Dig Only" / "Load&Travel" Mode Selection Switch |
| 5. High Flow Switch (Optional) | 11. Instrument panel |
| 6. Rear Window Wiper And Washer Switch | |

3.3.1. FRONT ATTACHMENT SWITCH

Front attachment switch is located on the right hand side instrument panel. The switch controls the hydraulic line connected to the front attachment. It is designed to use with rotating attachments. Do not hold the button pressed down continuously.

Operating with the 4 in 1 bucket :

When the bottom side of switch is pressed clamshell opens. When the upper side of the switch is pressed clamshell closes. Middle position is neutral.

3.3.2. PARKING (HAND) BRAKE SWITCH

To apply the parking brake, press the parking brake switch. "Parking brake applied warning light" will turn on in the instrument panel.

To release the parking brake turn off the switch. Warning light should turn off. Machine can not be moved when the parking brake is active.

STOP DANGER	
DO NOT use the parking brake to slow down the machine. Brakes are applied fully when parking brake switch is pressed. If pressed when traveling, machine stops instantly which may result in personal injury or death as well as equipment damage.	

3.3.3. HAZARD WARNING LIGHT SWITCH

Hazard warning light switch is located on the right hand side instrument panel. When this switch is operated machine's signal lamps gets activated also a red light flashes on and off on the switch even if the starter key is at "OFF" position.

This switch is used to inform emergency to the others during operations and urgent parking. In emergency situations hazard warning lights should be turned ON.

3.3.4. FRONT WINDOW WIPER AND WASHER SWITCH

The switch is located on the right hand side instrument panel. When pressed the front wiper starts to operate, if pressed again water sprays.

3.3.5. HIGH FLOW / LOW FLOW ATTACHMENT SWITCH (OPTIONAL)

Machines having optional high flow mode are powered by two hydraulic pumps to enable attachment functions. The three position locker switch on the right hand side instrument panel is used to control the flow mode of the front attachments. The switch is active when the operator's seat is turned to loader position. One of the "HIGH FLOW" / "Neutral position" / "LOW FLOW" modes can be selected. Functions of the modes are described below.

Position "0" (lower side of the button is pressed)**LOW FLOW MODE:**

Hydraulic fluid delivered to the attachments is supplied by the same hydraulic pump. Controlling the loader arm or boom reduces the hydraulic fluid rate delivered to the front attachment causing slow operation of the attachments.

In Low Flow mode max. flow of 60 lpm would be acquired when highest engine speed is set until max. pressure of 200 bar.

Position "I" (button is at the middle position)**NEUTRAL MODE:**

This is the neutral position. In this position flow mode is turned OFF. No hydraulic fluid is delivered to the attachments.

Position "II" (upper side of the button is pressed)**HIGH FLOW MODE:**

Hydraulic fluid delivered to the attachments is supplied by two different hydraulic pumps and 120 lpm of flow can be acquired at engine's highest speed until pressure reaches 120 bar. After pressure reaches 120 bar second pump is cut out and max. flow of 60 lpm would be acquired when highest engine speed is set until max. pressure of 200 bar.

3.3.6. REAR WINDOW WIPER AND WASHER SWITCH

The switch is located on the right hand side instrument panel. When pressed the rear wiper starts to operate, if pressed again water sprays.

3.3.7. ROTATING BEACON SWITCH

Rotating beacon switch is located on the right hand side instrument panel. It controls the rotating beacon on the roof of the operator's cab. When driving on public roads or when operating at places where safety is important turn the beacon on. An orange light on this switch indicates that it is "ON".

3.3.8. FRONT & REAR WORKING LIGHTS SWITCH

Front working light switch is located on the right hand side instrument panel. It controls front & rear working lights on the top of the operator's cab. When pressed only front working lights are turned ON. When pressed again front and rear working lights are turned ON together.

3.3.9. HEADLIGHTS & TAIL LIGHTS SWITCH

Headlights and tail lights switch is located on the right hand side instrument panel. It controls the driving lights at the front and back of the machine. When pressed low beam of headlights turn ON. When pressed again high beam of headlights turn ON. The symbol and the red light bar is illuminated when it is switched "ON".

3.3.10. "DIG&TRAVEL" / "DIG ONLY" / "LOAD&TRAVEL" MODE SELECTION SWITCH

This three-position switch is active when the operator seat is turned to backhoe position. One of the "DIG&TRAVEL" / "DIG ONLY" / "LOAD&TRAVEL" modes can be selected. Functions of the modes are described below.

DANGER

Before pressing the switch, stop moving the joysticks and then press the switch. If you press the switch while moving any of the joysticks, it may cause an accident.

Do not move the joysticks right after pressing the switch. After pressing the switch wait for 3 seconds for activation of machine functions.

Position "0" (lower side of the button is pressed)



symbol appears on the upper right part of the LCD display. Reverse travel lights come on and the buzzer sounds.

The following functions are operative:

- Backhoe boom is operative (Right joystick)
- Backhoe bucket is operative (Right joystick)
- Travel is enabled (Left joystick)
- Loader functions are unavailable

Position "I" (button is at the middle position)



symbol appears on the upper right part of the LCD display, with no Reverse travel lights and no buzzer.

The following functions are operative:

- Travel is disabled
- All functions of backhoe are operative

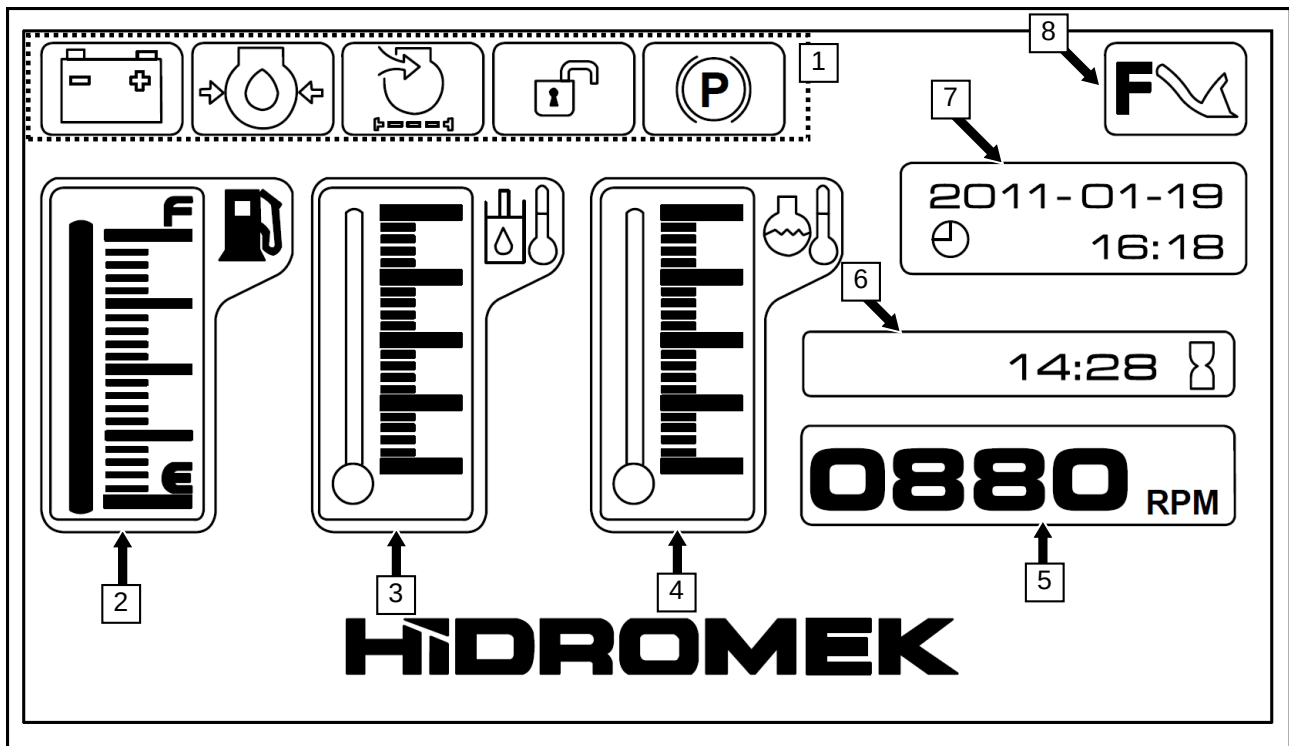
Position "II" (upper side of the button is pressed)



symbol appears on the upper right part of the LCD display. Reverse travel lights come on and the buzzer sounds.

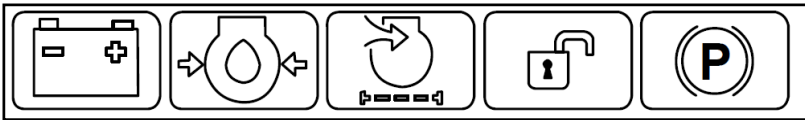
The following functions are operative:

- Loader functions are operative (Right joystick)
- Travel is enabled (Left joystick)
- Backhoe functions are disabled

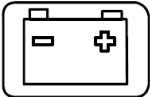
3.3.11. INSTRUMENT PANEL

Figure 3-5

- | | |
|-------------------------------------|---|
| 1. Warning light cluster | 5. Tachometer (rpm) |
| 2. Fuel level gauge | 6. Digital hour meter |
| 3. Hydraulic oil temperature gauge | 7. Date / Time |
| 4. Engine coolant temperature gauge | 8. "Loader / Backhoe Control Levers Active" Warning Light |

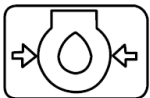
3.3.11.1 WARNING LIGHTS CLUSTER

**WARNING**

If one or more of the following lights (except for the parking brake warning light) turn on while the engine is running, stop the engine as soon as possible. Do not operate the machine until the fault is corrected.

**“NO CHARGE” WARNING LIGHT**

This red light turns on with an audio alarm if electrical charging system does not function properly. This light should turn off within few seconds after the engine is started.

**“LOW ENGINE OIL PRESSURE” WARNING LIGHT**

This red warning light turns on with an audio alarm should the engine oil pressure drop below safe operating pressure. This light should turn off after the engine is started.

**“AIR FILTER CLOGGED” WARNING LIGHT**

This red warning light turns on along with an audio alarm when the engine air filter becomes clogged.

**WARNING**

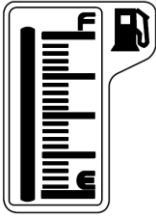
Do not clean the air filter element by any means. Provide spare elements in order to replace when the engine air clogged warning light is on.

**“JOYSTICK LOCK DISENGAGED” WARNING LIGHT**

This warning light turns on and an alert sound plays when control levers lock switch is pressed.

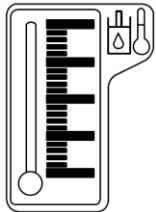
**“PARKING BRAKE APPLIED” WARNING LIGHT**

This red warning light turns on when parking brake is applied while the drive control lever is in neutral. The light goes off when parking brake is disengaged.



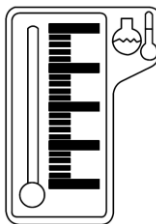
3.3.11.2 FUEL LEVEL GAUGE

This gauge indicates the amount of diesel fuel left in the fuel tank. NEVER allow the fuel tank to become empty as air will build up in the fuel system.



3.3.11.3 HYDRAULIC OIL TEMPERATURE GAUGE

1. Shows hydraulic oil tank temperature.
2. Alerts if hydraulic oil is warmer than acceptable value.



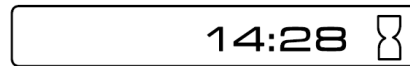
3.3.11.4 ENGINE COOLANT TEMPERATURE GAUGE

Indicates engine coolant temperature. It operates when the starter switch is in position I "ON".



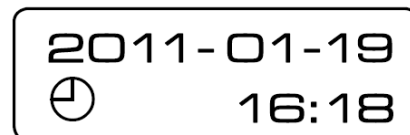
3.3.11.5 TACHOMETER

This gauge indicates engine speed in revolutions per minute (RPM). Each increment corresponds to 100 RPM. The red band on the scale indicates the danger zone. DO NOT operate the machine in the red zone.



3.3.11.6 HOURMETER

Indicates the total running time of the engine. The counter continues to register as long as the engine is running even though the machine is at standstill. It should be used to determine maintenance intervals.



3.3.11.7 DATE / TIME

Shows current date and time.

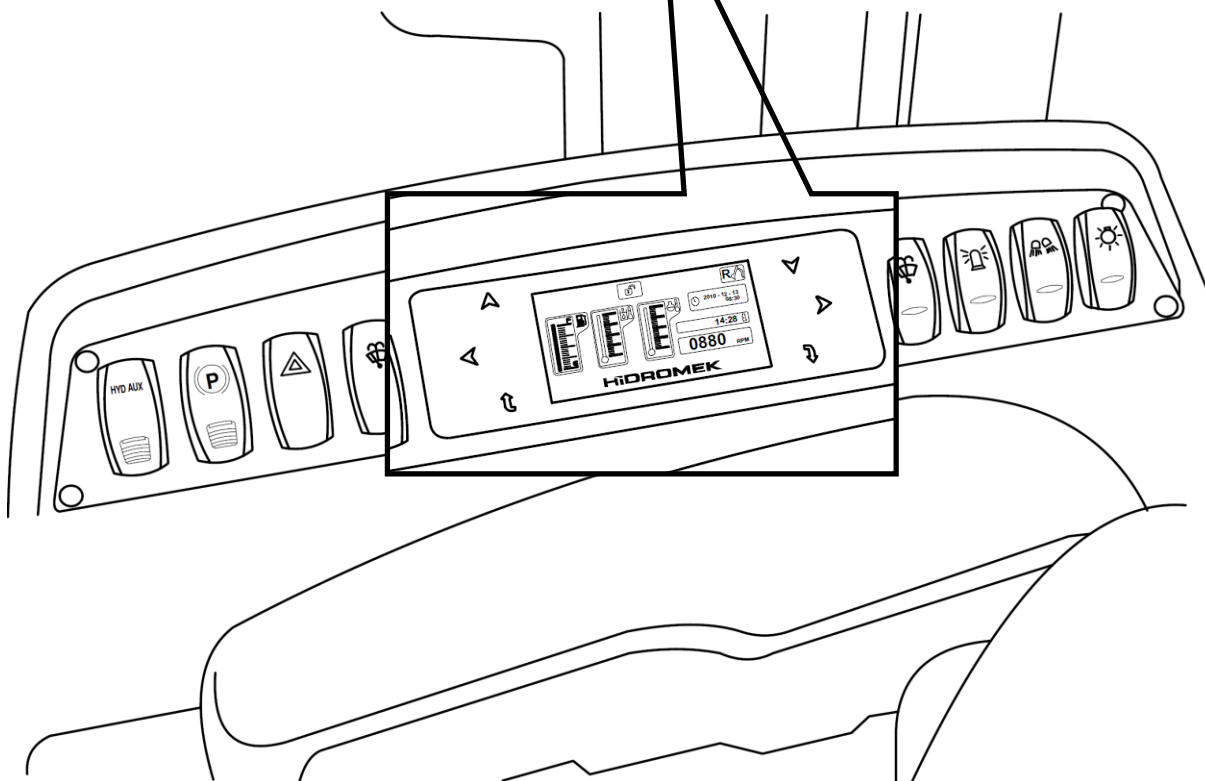
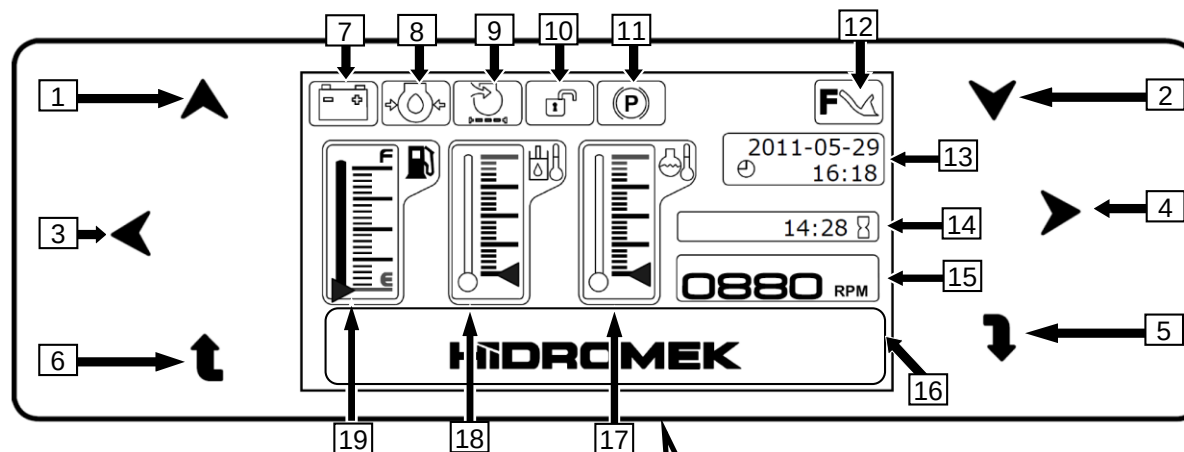


3.3.11.8 "LOADER / BACKHOE CONTROL LEVERS ACTIVE" WARNING LIGHT

When operator's seat has turned to the loader side and locked then "F" and loader symbol appears on the screen. When operator's seat has turned to the backhoe side and locked then "R" and backhoe symbol appears on the screen. When the seat lock is disengaged and the seat is turned to another position, then no symbol is shown on the screen.

INSTRUMENT PANEL

- | | |
|--|--|
| 1. "Up scroll" key | 11. "Parking brake applied" warning light |
| 2. "Down scroll" key | 12. "Loader/Backhoe Control Levers Active" warning light |
| 3. "Left scroll" key | 13. Date / Time |
| 4. "Right scroll" key | 14. Digital hour meter |
| 5. "Menu Enter / Yes" key | 15. Tachometer (rpm) |
| 6. "Menu page exit / Cancel" key | 16. Menu display |
| 7. "No charge" warning light | 17. Engine coolant temperature gauge |
| 8. "Low engine oil pressure" warning light | 18. Hydraulic oil temperature gauge |
| 9. "Air filter clogged" warning light | 19. Fuel level gauge |
| 10. "Joystick lock disengaged" warning light | |



MENU ITEMS

Enter the control menu by pressing “menu enter key” (↵). Menu is displayed on the screen. The main menu includes 5 sub-menus.

1. LANGUAGE

Use this menu to set the machine control menu in your preferred language.

2. STATUS INFORMATION

Press to see current operational parameters such as temperatures, pressures, current etc. 41 different parameters can be viewed.

3. WORKING HOURS

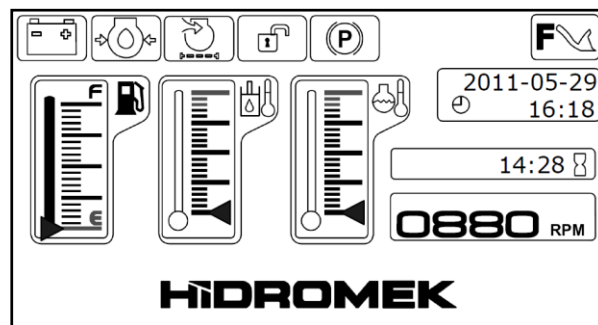
16 different types of operating hours can be viewed.

4. VERSION

Instrument panel and machine control unit version can be viewed.

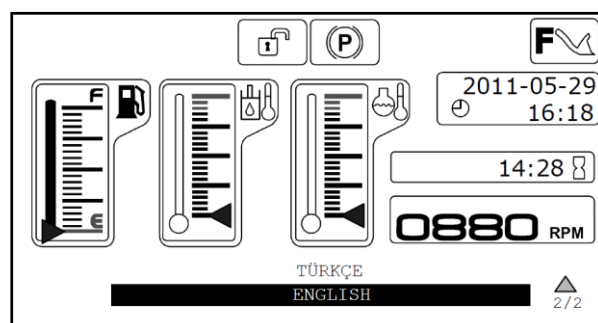
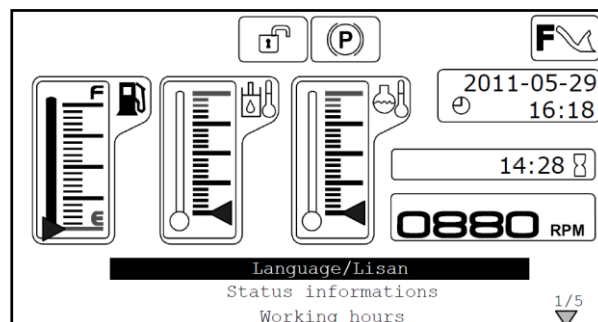
5. CONFIGURATION

4 type of setting can be done.

**1. LANGUAGE**

To set your preferred language, perform the followings.

1. Select “Language” item by using up and down scroll keys (▲/▼).
2. Move the cursor by up and down keys (▲/▼) to highlight the desired language.
3. When the cursor is on desired language, press “enter key” (↵).
4. To exit from the menu, press “menu page exit” key (⬅).



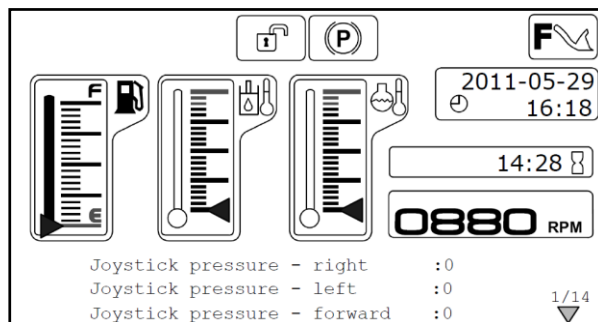
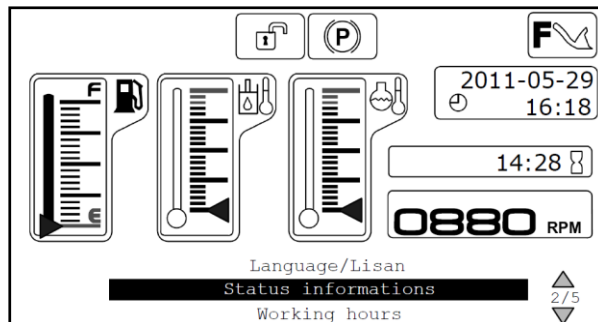
2. STATUS INFORMATION

To view the status information contents follow these steps.

Move the cursor (▲/▼) to find “status informations”. When the cursor is on “status informations”, press “enter key” (↵).

Status informations menu has 14 pages and every page has 3 different information items.

To enter each page, press up and down scroll keys (▲/▼).



1. Joystick pressure - right
2. Joystick pressure - left
3. Joystick pressure - forward
4. Joystick pressure - rear
5. Seat direction - front
6. Seat direction - rear
7. Joystick left switch-1
8. Joystick left switch-2
9. Joystick left switch-3
10. Hydraulic lock switch
11. Open bucket switch
12. Bucket open
13. Close bucket switch
14. Bucket close
15. Joystick right switch-3
16. Emergency flasher switch
17. Parking switch
18. Preheat
19. Position select valve (LEFT)
20. Travel valve
21. Engine oil pressure
22. Position select valve (RIGHT)

23. Loader system active
24. Back-hoe system active
25. Hydraulic oil temperature
26. Engine coolant temperature
27. Fuel Level
28. Battery voltage
29. Engine speed (rpm)
30. Hydraulic security valve
31. Bizer output
32. Reverse gear horn
33. Brake lamp output
34. Parking valve
35. Breaker-A valve
36. Breaker-B valve
37. Air filter
38. Hydraulic over-tempera. alarm
39. Engine over-temperature alarm
40. Alternator charge
41. Signal lamp - right
42. Signal lamp - left
43. Travel system active
44. Starter relay

3. WORKING HOURS

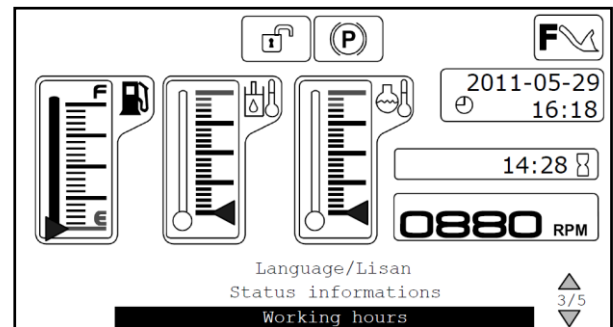
To view the working hours, move the cursor (▲/▼) to find “working hours”. When the cursor is on “working hours”, press “menu enter key” (↵). Working hours menu has 7 pages and every page has 3 different information items. Working hours are not adjustable.

Menu items are listed below.

To view working hours items, follow the steps.

1. Enter the menu by pressing the enter key (↵).
2. Move cursor (▲/▼) to select the “working hours” menu and press enter key (↵).
3. Press scroll keys (▲/▼) to select the desired working hours page.

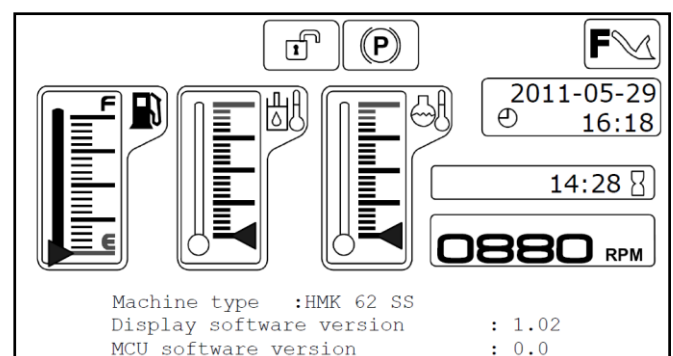
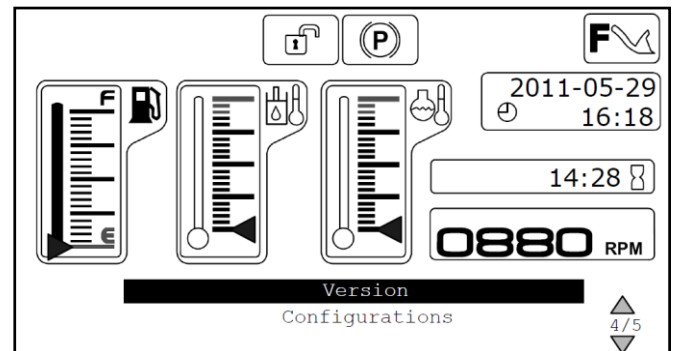
To exit the menu, press exit key (⏏) anytime.



User working hour	00000 :00	1400-1600 rpm hour	00000 :00
Starter-on hour	00000 :00	1600-1800 rpm hour	00000 :00
Working hour	00000 :00	1800-2000 rpm hour	00000 :00
Loader working hour	00000 :00	2000-2200 rpm hour	00000 :00
Back-hoe working hour	00000 :00	2200-2400 rpm hour	00000 :00
Low-idle hour	00000 :00	2400-2600 rpm hour	00000 :00
1000-1200 rpm hour	00000 :00	2600-2800 rpm hour	00000 :00
1200-1400 rpm hour	00000 :00	2800+ rpm hour	00000 :00

4. VERSION

1. Select “Version” item and press enter (↵).
2. To exit the page press exit key (⏏).



5. CONFIGURATIONS

The "CONFIGURATIONS" menu under the main menu allows the operator to set 3 different functions.

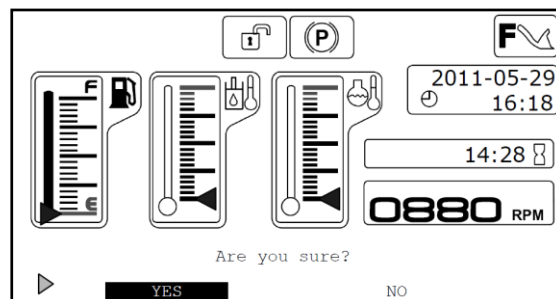
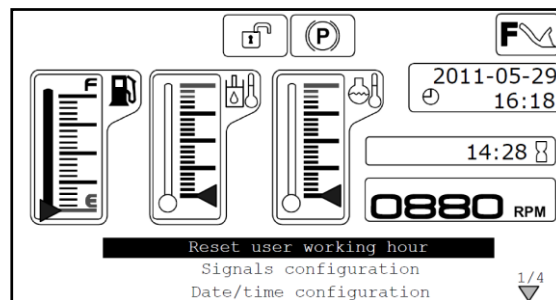
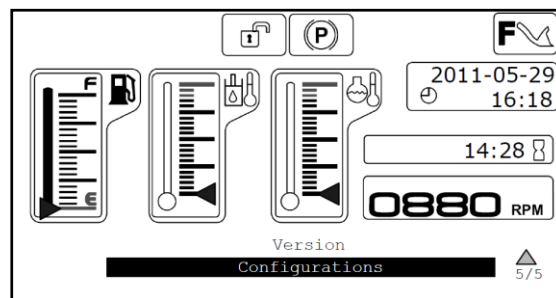
1. Reset user working hour
2. Date/time configuration
3. Signal configuration
4. Key tone configuration

1. Resetting user working hour

User working hour parameter can be reset by the operator.

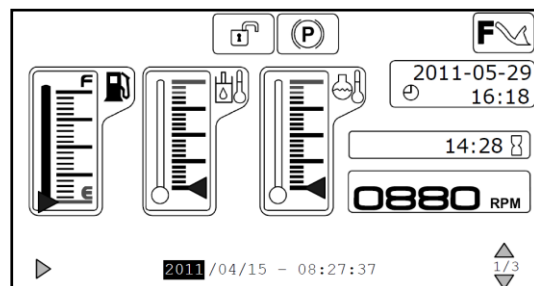
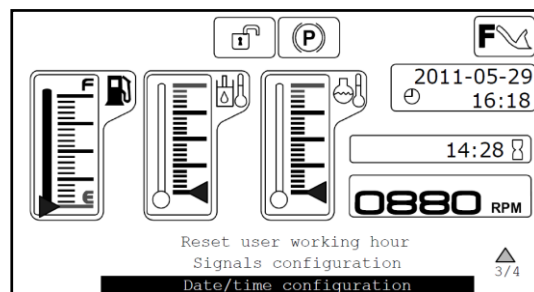
To reset the user working hour do the following steps :

1. Start the engine.
2. Wait until the screen shows "HIDROMEK".
3. To reset the "trip odometer" select "Reset user working hour" under the settings menu.
4. Press the left key (◀) to select "YES".
5. Press enter key (↵) to confirm and exit the page.



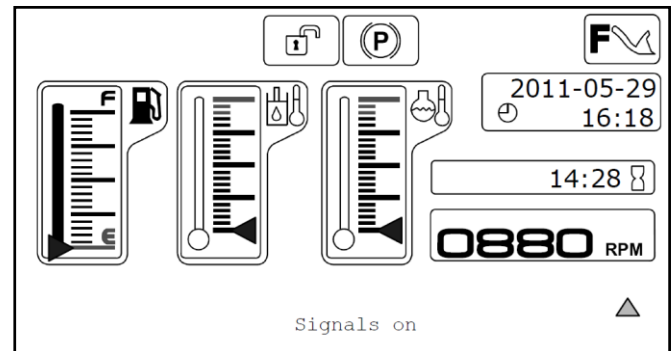
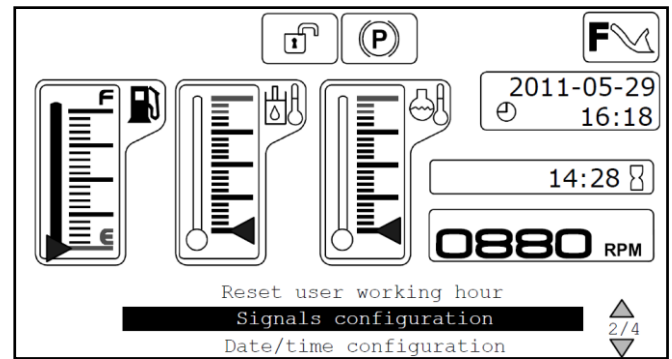
2. Date-Time Configuration

1. Select "Settings" item and press enter (↵).
2. Move cursor (▲/▼) to find "Date/time configuration" and press enter (↵) to set the correct date and time.
3. When the cursor is on the desired item, use up and down keys (▲/▼) to change the numbers.
4. When the item is updated, press (◀/▶) to select another item and repeat step 3.
5. When all numbers are updated, press enter (↵) to approve the updated values.



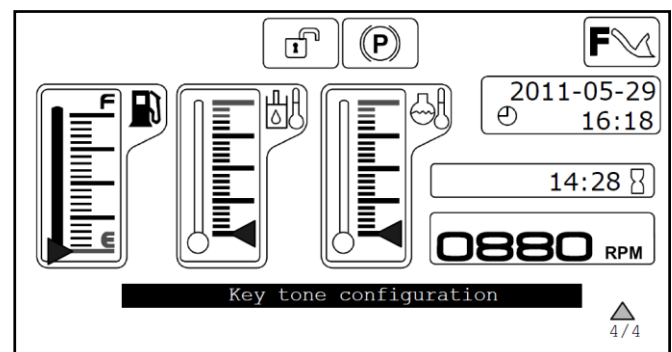
3. Signals configuration

1. Select "Settings" item and press enter (↵).
2. Move cursor (▲/▼) to find "signals configuration" and press enter (↵) to set the key tone.
3. Press up and down keys (▲/▼) to set the signals on/off.
4. Press enter (↵) to approve and exit page.



4. Key Tone Configuration

1. Select "Settings" item and press enter (↵).
2. Move cursor (▲/▼) to find "Key tone configuration" and press enter (↵) to set the key tone.
3. Press up and down keys (▲/▼) to set the key tone on/off.
4. Press enter (↵) to approve and exit page.



3.4. HAND THROTTLE LEVER

HIDROMEK backhoe loaders are equipped with a throttle lever that should be used to set the engine RPM when working with backhoe.

Lift the lever up to increase the engine speed.

Push the lever down to decrease the engine speed.



WARNING

Do not use throttle lever while working with loader or when driving. Adjust the engine speed within 1200 - 1500 rpm when working with backhoe. Adjusting to higher speeds does not significantly improve the performance.

3.5. LEFT HAND SIDE CONSOLE

On the left hand side console there are switches to use when working with backhoe. And the battery switch is located here.

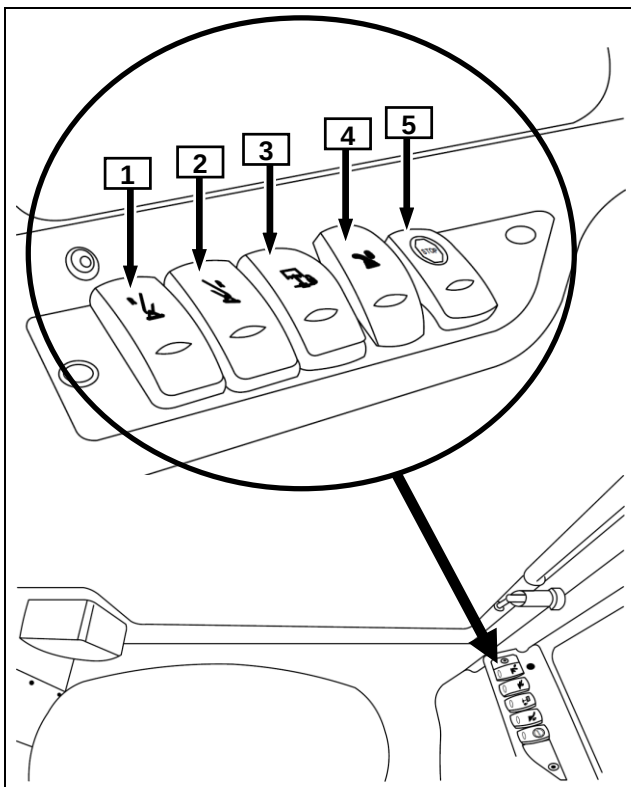


Figure 3-6

1. Right stabilizer switch
2. Left stabilizer switch
3. Hydraulic clamping switch
4. Control levers (joystick) lock switch
5. Engine emergency stop switch

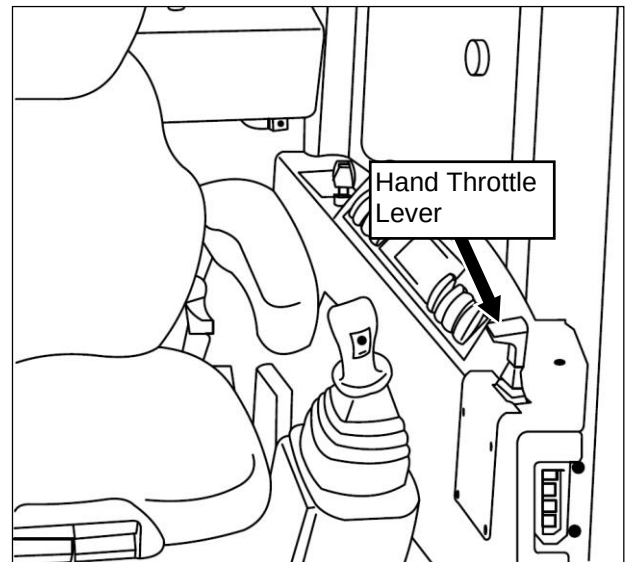


Figure 3-7

3.5.1. RIGHT / LEFT STABILIZER SWITCHES

Right and left stabilizer switches control right and left stabilizers respectively. Press bottom side of the switch to move the stabilizer DOWN and press upper side of the switch to move the stabilizer UP. When the switch is not pressed then no action is performed.



WARNING

Before extending stabilizers, be sure that the shoes are fully and firmly seated on the ground. Any material such as a hard stone that will prevent stable seating of a shoe may cause damage to the shoe and even hamper machine stability.

3.5.2. HYDRAULIC CLAMPING SWITCH

Hydraulic clamping switch is located on the right hand side of the right instrument panel. Hydraulic clamps are used to prevent laterals movement of the backhoe kingpost on the sideshift frame. They are normally in clamped state unless sideshifting of the backhoe is needed. To release the clamps, press on the upper part of the switch. Switch off to tighten the clamps again. The symbol on the switch is illuminated when the parking lights are ON. An orange bar on this switch lights to indicate that it is "ON".

3.5.3. CONTROL LEVERS (JOYSTICK) LOCK SWITCH

Control levers lock switch is located on the left hand side console. After swiveling and locking the seat at the working position, press this switch to unlock the control levers. When pressed to the upper side of the switch, it plays an alert sound and illuminates. Press the lower side of the switch to lock the controls again.

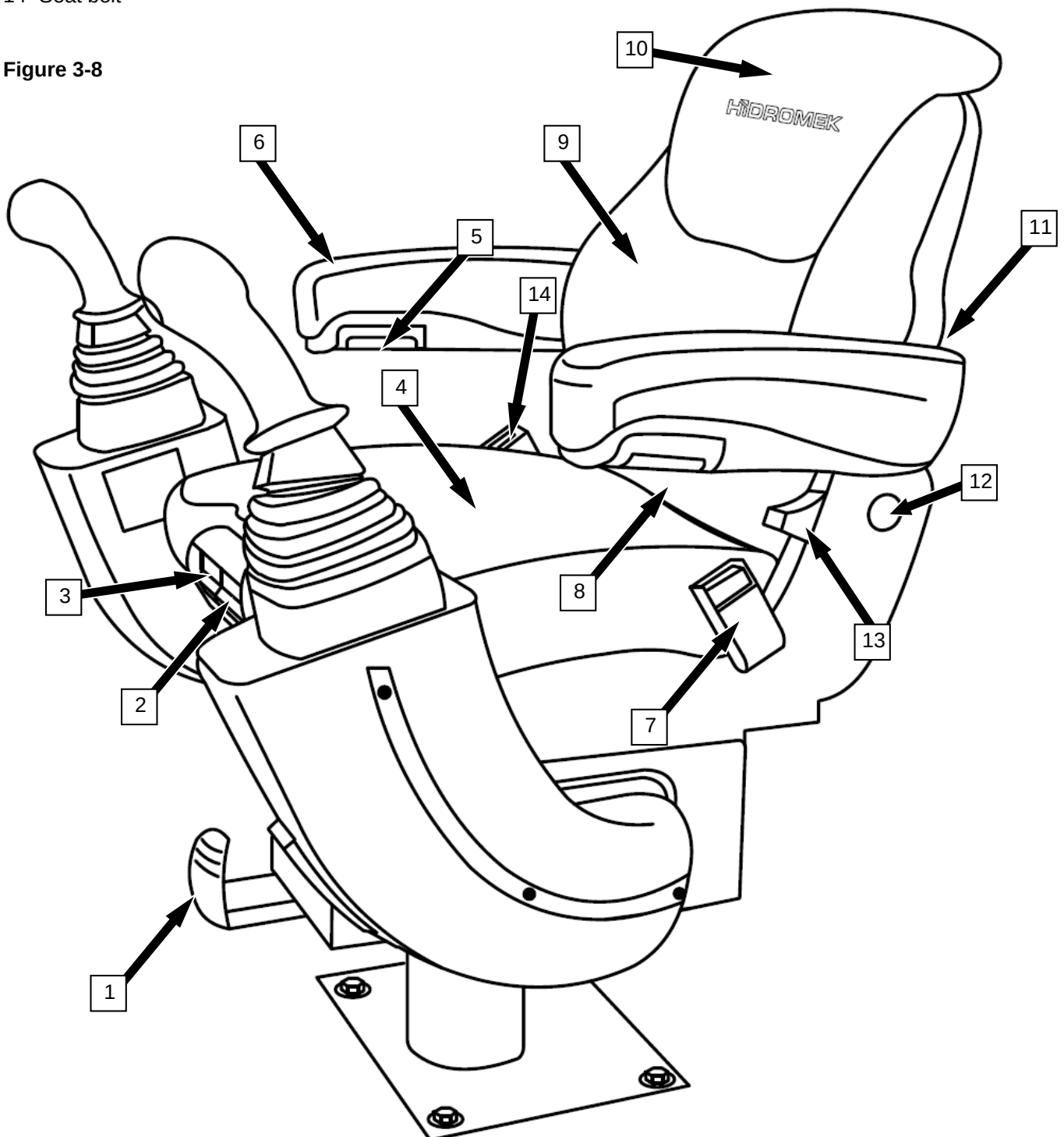
3.5.4. ENGINE EMERGENCY STOP SWITCH

Use this switch if the engine can not be shut and only in case of an emergency situation to stop the engine immediately.

3.6. OPERATOR'S SEAT

- 1 - Swivel
- 2 - Seat pan angle adjustment
- 3 - Seat depth adjustment
- 4 - Seat pan
- 5- Armrest angle adjustment
- 6- Armrest
- 7- Seatbelt bucket
- 8- Lumbar support
- 9- Backrest
- 10- Backrest extension
- 11- Lumbar support adjustment
- 12- Armrest height adjustment
- 13- Backrest adjustment
- 14- Seat belt

Figure 3-8



General

The standard machine is equipped with a mechanically controlled operator's seat. A pneumatically controlled seat can be installed and is available as an option.

The seat is supplied with grease which will last approximately 10 years. It must be re-greased only after servicing otherwise you don't need to grease it.

Swivel

The swivel is released by pushing the locking switch with back of the foot. The seat can then be swiveled from loader position to backhoe position after turning 180° degrees. And it can be locked in both positions.

WARNING

The locking lever must latch audibly into place. Otherwise seat can turn out of control suddenly and cause severe injury.

WARNING

Fasten your seat belt before starting engine and keep it fastened. Seatbelt is the most necessary part of the ROPS system.

WARNING

NEVER try to adjust the operator's seat while the machine is moving or working.

Seat pan angle adjustment

The angle of the seat pan can be individually adjusted. To adjust the angle of the seat pan, lift the L/H handle. By exerting pressure on or off the seat pan it can be moved to the desired angle position. (Figure 3.10)

Seat depth adjustment : The depth of the seat pan can be individually adjusted. To adjust the depth of the seat cushion, lift the R/H handle. By moving the seat cushion backwards or forwards the desired seating position can be reached. (Figure 3.11)

WARNING

Call your service for problems with your seat. Never try to fix it on your own.

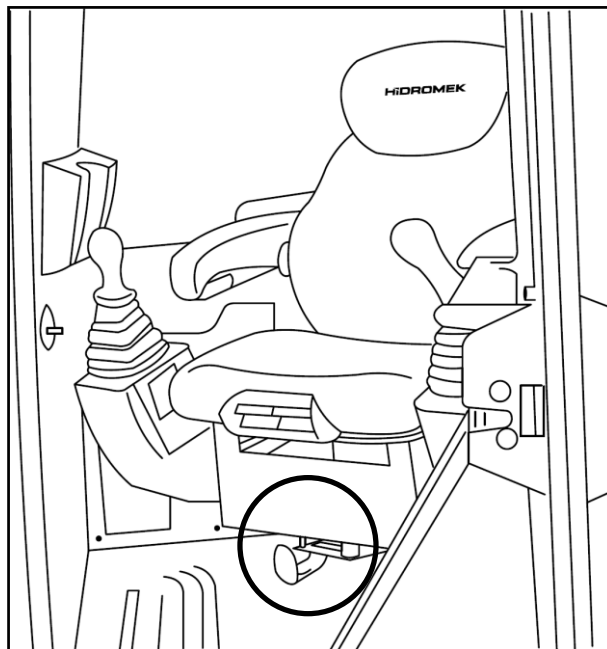


Figure 3-9

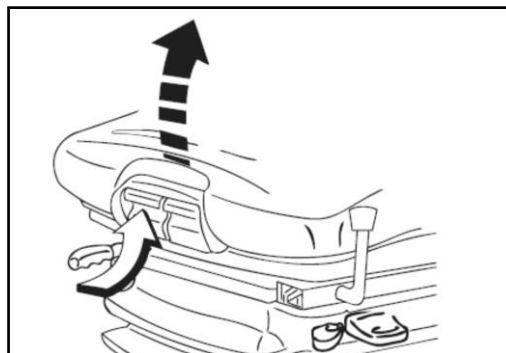


Figure 3-10

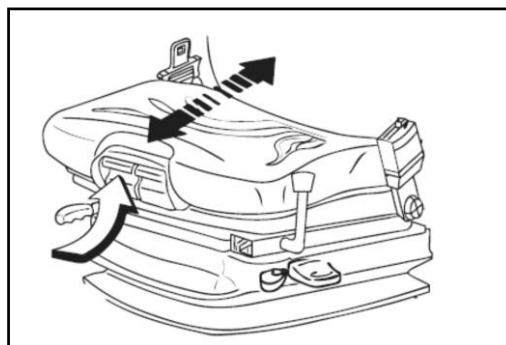


Figure 3-11

Backrest extension: The backrest adjustment 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. The backrest adjustment must be pushed in as far as it will go. The backrest adjustment can be removed if required by simply pulling it out. (Figure 3.12)

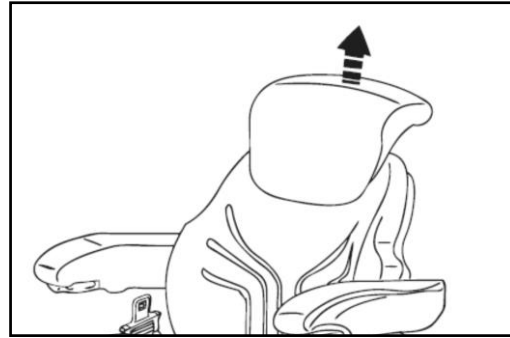


Figure 3-12

Lumbar support: By turning the adjustment knob to the left or right, both the height and curvature of the backrest cushion can be individually adjusted. This increases both the seating comfort and the performance of the driver. (Figure 3.13)

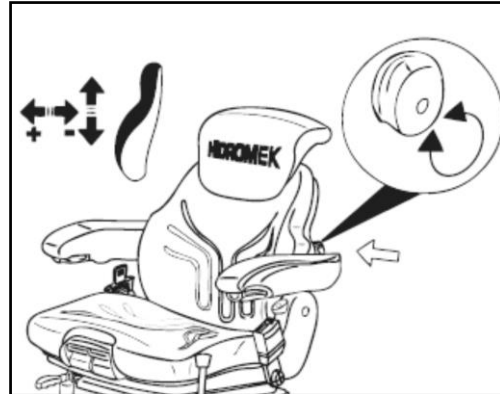


Figure 3-13

Armrests

The armrests can be folded back if required. The height of the armrests can be individually adjusted. To adjust the armrests for height, separate the round cap (see arrow) from the cover, loosen the hexagon nut (size 13mm) and adjust the armrest to the desired position and tighten the nut again. Fit the removed round cap on the nut by applying pressure. (Figure 3.14)

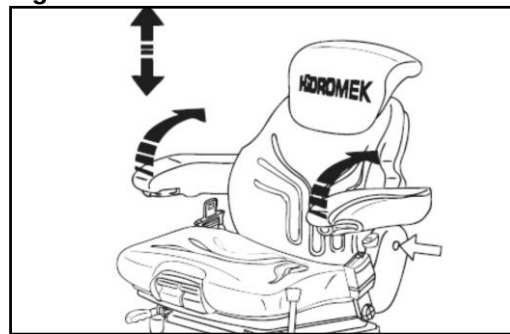


Figure 3-14

Armrests angle adjustment

The inclination of the armrests can be modified by turning the adjustment knob. (Figure 3.15)

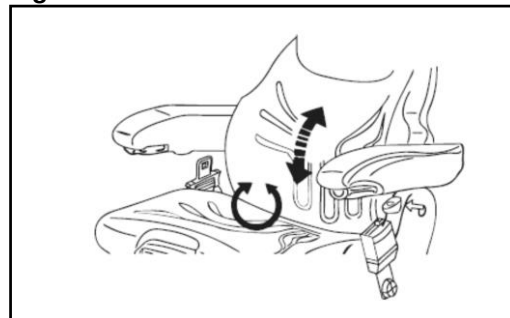


Figure 3-15

Backrest adjustment

The backrest is adjusted using the locking lever (arrow). (Figure 3.16)

STOP

DANGER

The locking lever must latch into the desired position. It should not be possible to move the backrest into another position when it is locked.

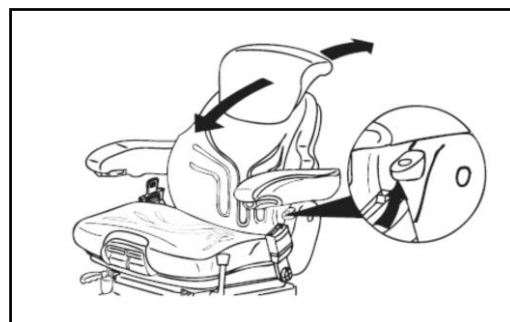


Figure 3-16

Maintenance

Dirt can impair the function of the seat, so make sure you keep your seat clean!

Upholstery can be quickly and simply removed from the seat frame for easy cleaning or replacement.



DANGER

Take care with the backrest frame - it may jerk forward and cause injury!

During cleaning, the upholstery should not be soaked through.

Use standard commercially available upholstery or plastics cleaning agent. Test first for compatibility in a small, concealed area and never soak the upholstery completely.

3.7. SEAT BELT

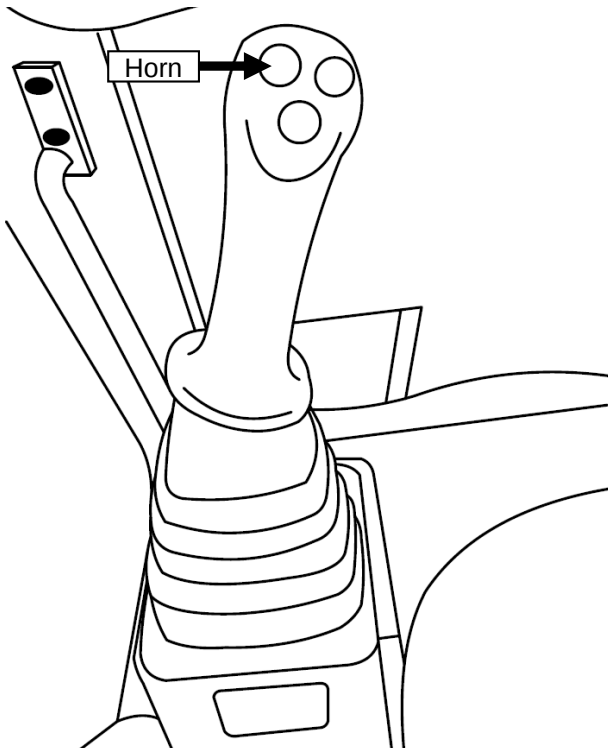
- Seatbelts must be fastened before driving and must be kept attached during driving and operation.
- Check the condition of the seatbelt and its parts every time you get in the machine. Make sure the mechanism functions properly.
- If it is worn or involved in an accident or used in any other situation that might cause tension on the seatbelt, or if its attaching parts (loosening, swinging etc.) are not correctly fit, do not operate the machine before the problem is fixed.
- Change the seatbelts every 3 year periodically even if they have no apparent problems.
- Do not make, or allow anybody to make any modification to the seatbelt and its parts.
- Seatbelts and their parts can not be repaired. Change if necessary.
- When removing the seatbelt hold the seatbelt with your right hand and push the button with your left hand. Otherwise seatbelt may fly out and may cause unexpected accidents and injury.
- If it is necessary to clean the seatbelt you can wash it with natural soap and water. Leave it to dry outside of its box and put back in the box correctly.



3.8. CONTROL LEVERS

Operator can easily reach the control levers at the right and left hand side of the operator's seat. Right and Left control levers have different functions according to the position of the seat. When seat faces forward, left control lever controls travel motors and right control lever controls loader attachment.

When seat faces backward (backhoe side), both control levers control backhoe attachment.

3.8.2. LOADER POSITION**3.8.2.1 Left control lever**

Left control lever functions as travel lever. Machine moves according to lever's direction.

A) "FORWARD" : Travel "FORWARD" : Machine travels forward when lever is pushed forward. The machine speed is faster as the lever is further pushed forward.

B) "RIGHT" : Turn "RIGHT": Machine turns to right when lever is pushed to right. Signal lamps turn ON automatically.

C) "LEFT" : Turn "LEFT": Machine turns to left when lever is pushed to left. Signal lamps turn ON automatically.

D) "BACKWARD" : Travel "BACKWARD": Machine travels backward when the lever is pulled backwards. Machine speed is faster as the lever is further pulled backward. Signal lamps turn ON automatically and reverse gear sound starts working.

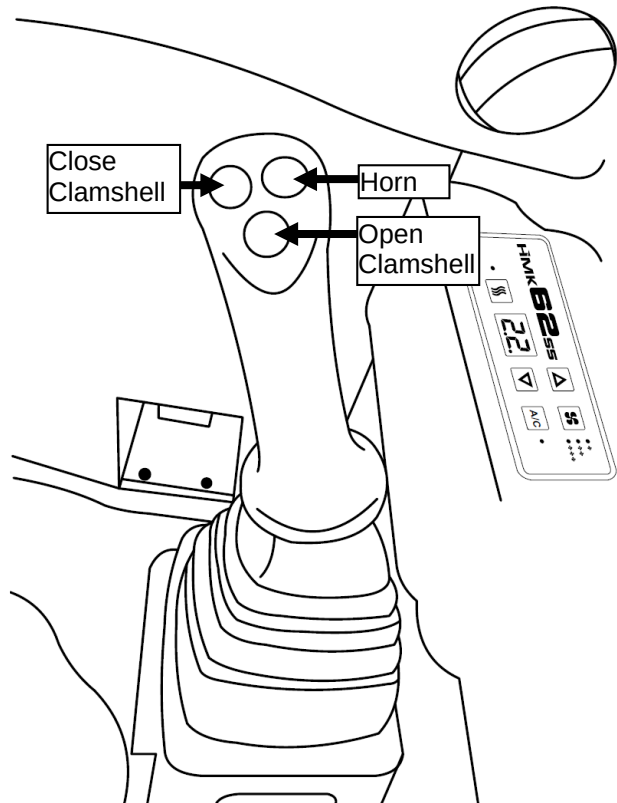
"CENTRE": "HOLD": Spring loaded lever returns to the central position when released from any operational position and shuts current function off and applies brakes.

3.8.1. HORN

Push the button on the top end of drive control lever to sound the horn.

**WARNING**

NEVER leave the machine when the engine is operating or before swiveling the seat. When the seat is locked at its front or rear position, control levers are active.

**3.8.2.2 Right control lever**

Right control lever controls the loader operations.

A) "FORWARD" : Loader arm "DOWN" : Loader lowers DOWN when lever is pushed forward. The arm movement is faster as the lever is further pushed forward.

B) "RIGHT" : Loader bucket "DUMP": Loader bucket dumps when lever is pushed to right side to unload (Unloading)

C) "LEFT" : Loader bucket "TILT BACK": Loader bucket tilts back when lever is pulled to left side to collect the load (loader bucket filling).

D) "BACKWARD" : Loader arm "UP": Loader lifts UP when lever is pulled backwards. The arm movement is faster as the lever is further pulled backward.

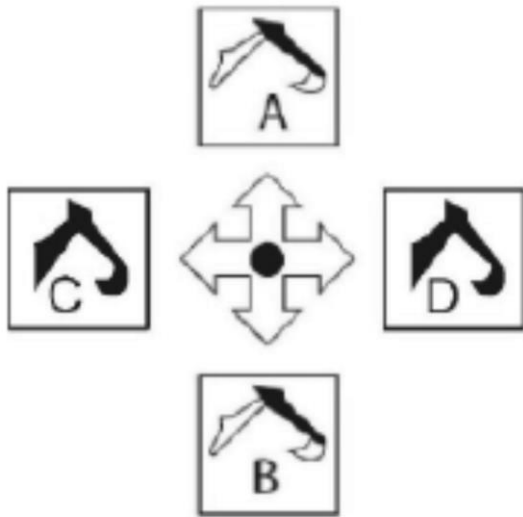
"CENTRE": "HOLD": Spring loaded lever returns to the central position when released from any operational position and shuts current function off.

3.8.3. BACKHOE POSITION

When operator's seat is turned to the back of the machine, control levers control the backhoe attachment. Press the control lever lock switch on the left hand side console to lock the control levers. when locked the switch illuminates. Press again to release the lock.

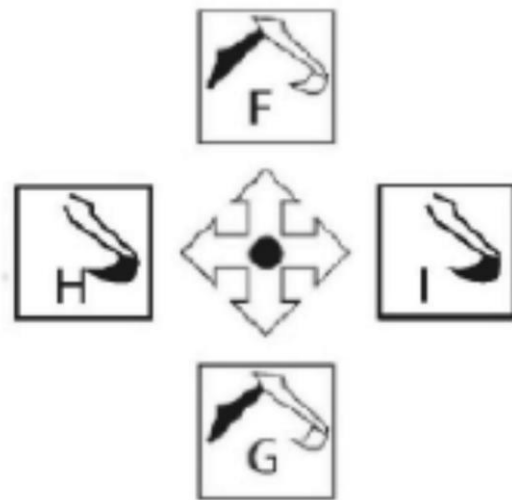
⚠ WARNING

Before leaving the operator's cab always push the swivel switch of the seat to lock the control levers and turn the seat to a suitable position.



Left hand side control lever

- A) "FORWARD" : Arm "UP"
- B) "BACKWARD" : Arm "DOWN"
- C) "LEFT" : Backhoe slew "LEFT"
- D) "RIGHT" : Backhoe slew "RIGHT"
- E) "CENTRE" : "HOLD"

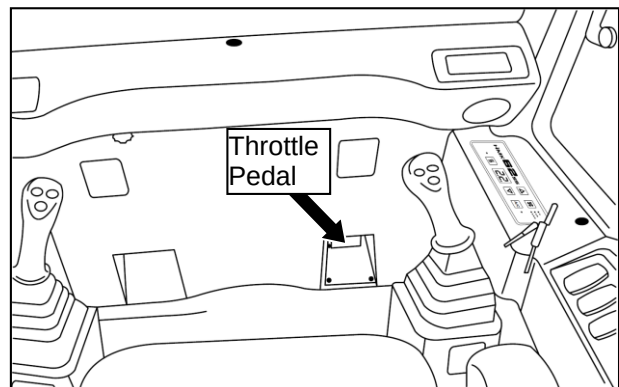


Right hand side control lever

- F) "FORWARD" : Boom "DOWN"
- G) "BACKWARD" : Boom "UP"
- H) "LEFT" : Bucket "IN"
- I) "RIGHT" : Bucket "OUT"
- E) "CENTRE" : "HOLD"

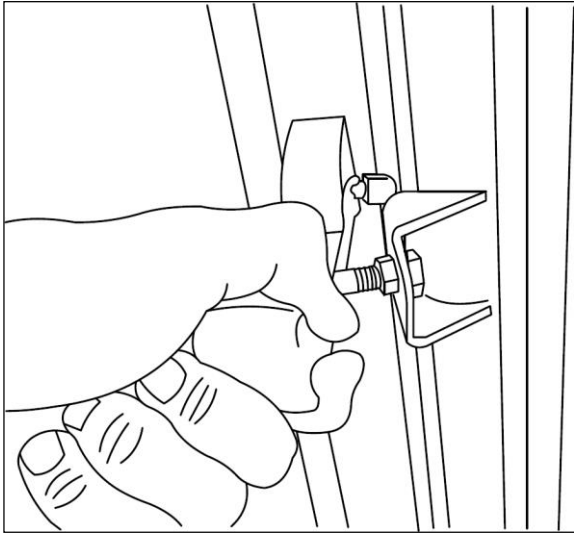
3.9. THROTTLE PEDAL

A foot operated throttle pedal (1) is provided on the lower right hand side of the front console to control the engine RPM and thus the speed of the machine. When the pedal is depressed engine RPM increases. When the pedal is released the engine RPM drops to idle speed.



3.10. WINDOWS

Operator cab's windows should open to let the air in the cab.

**OPENING THE SIDE WINDOW**

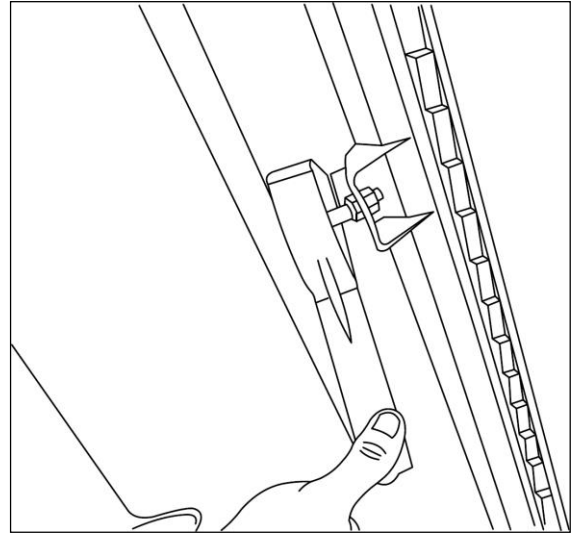
Hold the handle near the window.

Turn the handle up.

Push the handle forward and insert the holes on the handle to the pin to make it rigid.

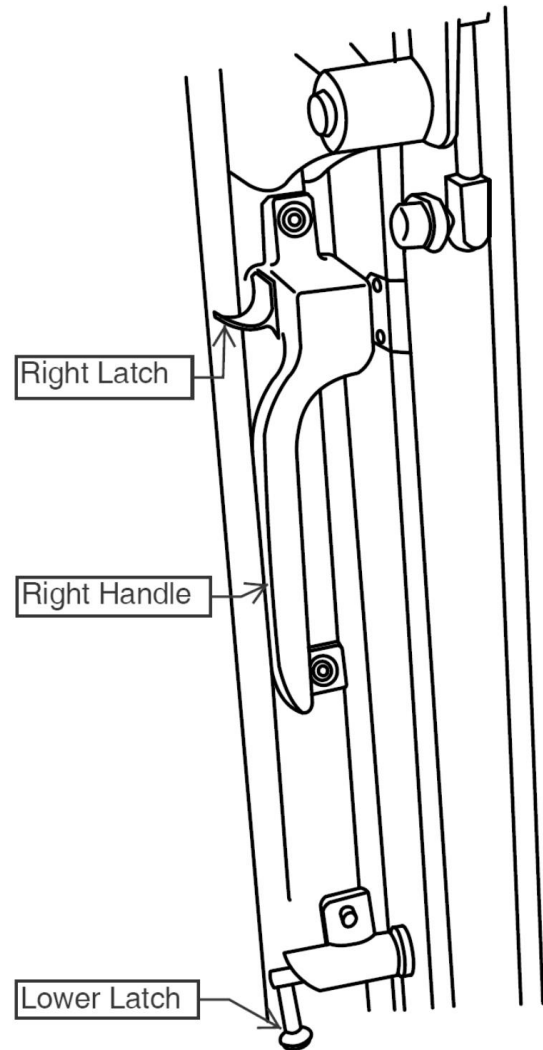
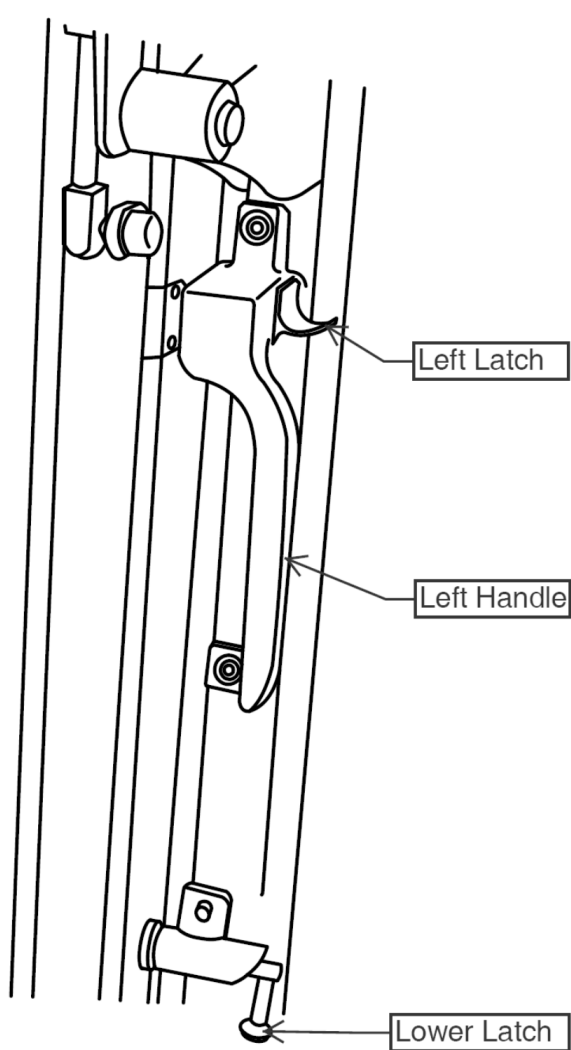
Adjust the opening with selecting the right hole on the handle.

If you want to change the opening just move the handle laterally a bit and change the hole.

**CLOSING THE SIDE WINDOW**

Pull the handle laterally and release the pin.

Close the window and push the handle down.



OPENING THE REAR WINDOW

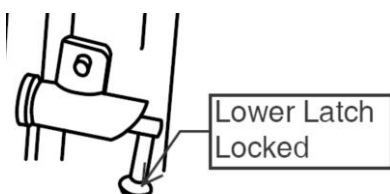
A) Unlock the lower latches at each side. See pictures below for the locked and unlocked positions of the lower latches.

B) Hold the handles at each side. If held correctly latches will be against your thumbs.

C) Unlock the latches by pressing and pull first backwards then upwards to slide the window until it stows under the roof in a horizontal position.

D) After the window stows under the roof, check if the latches are secure and window is stable.

E) Lock the lower latches.



CLOSING THE REAR WINDOW

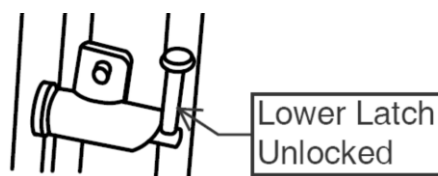
A) Unlock the lower latches at each side. See pictures below for the locked and unlocked position of the lower latches.

B) Hold the handles at each side. If held correctly latches will be against your thumbs.

C) Unlock the latches by pressing until window starts moving and push the window to slide down.

D) Push the window until it is fully closed. It will get locked at its own position.

E) Lock the lower latches.

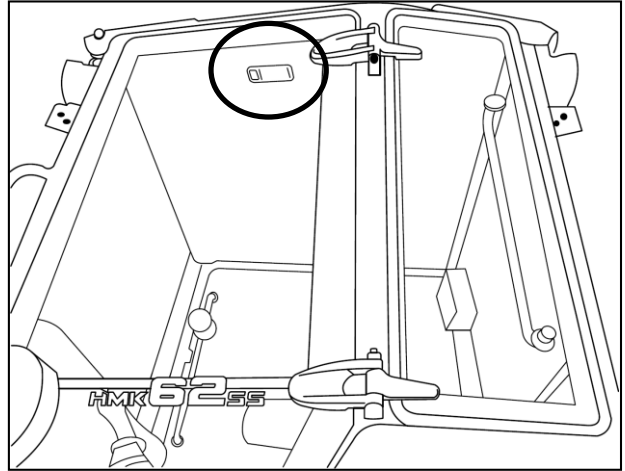


3.11. INTERIOR LIGHT

Interior light of the operator's cabin is located on the right hand side of the ceiling just above the operator.

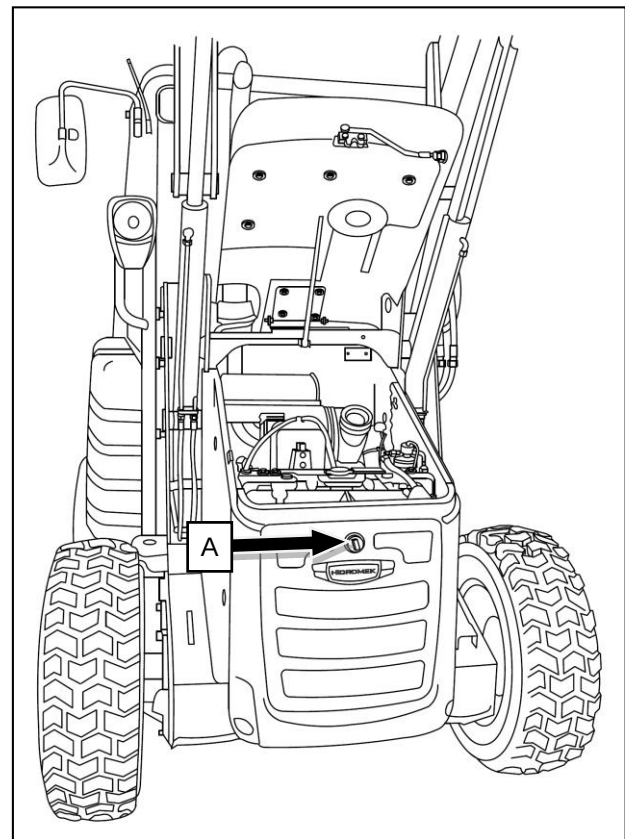
A. Turn interior light 'ON' by pushing the switch of interior light forward.

B. Turn 'OFF' by pushing the switch of interior light backward.

**3.11.1.1 OPENING THE ENGINE HOOD**

Use the starter key to open the engine hood when necessary. To open the hood put the key into the keyhole (A) and unlock. Pull the engine hood up.

Side covers should be removed additionally before maintenance.

**3.12. TOOLBOX**

Toolbox (C) is provided outside of the operator's cab and under the rear window. To open the toolbox use the starter key to unlock and pull the cover up.

Inside the toolbox you can find necessary tools and a grease pump that you can use during maintenance or repair of the machine.

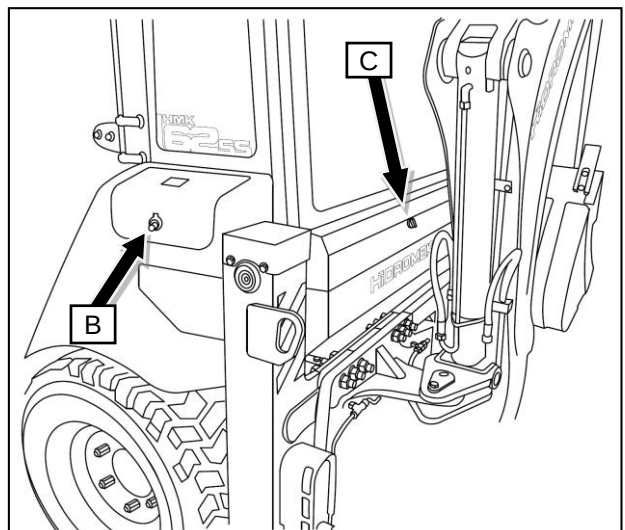
⚠ WARNING

Never start maintenance before applying all the security rules and never repair or maintain the parts on your own which must be done by HIDROMEK QUALIFIED SERVICES.

3.13. STOWAGE BOX FOR OBJECTS

Outside the operator's cab there is a stowage box (B) that should help operator to organize his objects and documents.

To open the stowage box use the starter key to unlock and pull the cover up.



OPERATION

4. OPERATION

4.1. GENERAL

CAUTION

Before starting the engine and operating the backhoe loader, review and comply with all safety recommendations set forth in the safety chapter of this manual. Know how to stop the backhoe loader before starting it. Also, be sure to fasten and properly adjust the seat belt.

4.2. BEFORE STARTING

The inspections listed here are to be performed prior to starting and operating the machine, and are related to performance of the machine as well as personal safety. Inspection and repair operations must be performed by authorized Hidromek servicemen only. You should perform these inspections on machines that are out of service for an extended duration. It is recommended that the operator stop the machine and take time to perform inspections after working for extended periods of working hours.



WARNING

Attachments in lifted position are dangerous for people passing or working underneath. You may be crushed or caught by the linkages which could result in serious injury or death.

4.2.1. CLEANLINESS INSPECTION

- a) Any absent, damaged or unreadable safety decal must be renewed. All decals for safety must be kept clean.
- b) Glass equipment such as the windows, lights and mirrors ought to be clean for clear visibility. Make sure the wiper blades are clean and functioning.
- c) Be certain that the steps and grip bars of the operator's cabin are clean and dry.
- d) Links, rotating joints, hydraulic cylinders and radiators must be free of dirt and/or deposits particularly.

4.2.2. DAMAGE INSPECTION

- a) The panels and the covers as well as the windows should be checked for damage.
The knobs of the panels and covers should not to be loose.
- b) Check the tightness of the fuel tank filler cap. Make sure the cap is not damaged.
- c) Perform visual inspection under the machine for leaks (oil, fuel and coolant).
- d) Be sure that all the pins are fitted securely to their correct positions.
- e) Inspect the condition of the buckets and check for excessive play in the linkages.
- f) Check for damaged or absent parts in general.
- g) Check hydraulic, fuel, coolant and oil lines, and cables for damage, looseness, bad connection and excessive wear. Inspect the hydraulic hoses for wear, swelling, cuts and for bad crimpings.

4.2.3. TYRE INSPECTION

Verify tyre inflation pressures and have a qualified tyre mechanic inflate to correct pressure if not adequate. Low pressure will shorten the life of a tyre. Consult the manufacturer's specification for correct tyre inflation pressure for your conditions.

The tyres should be inspected for cuts on rubber and insertion of pointed objects. Any damaged tyre should never be installed on the machine. Visually inspect bolts for loosening and ask a tyre specialist to tighten.

WARNING

Over inflated and overheated tyres can explode. Exploded tyre can kill or cause serious injury. Always ask a tyre specialist if any repair is needed on the rims or tyres. The machine must never be operated if the tyres are damaged, improperly inflated and if there is excessive or uneven wear.

4.3. GETTING IN AND OUT OF THE CAB

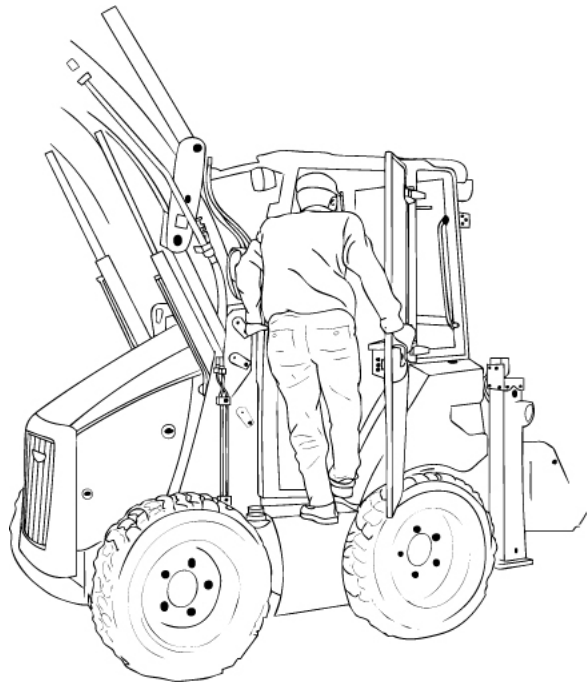
Steps and hand rails must be used when getting in or out of the operator's cabin.

WARNING

You must face the machine while getting in or out of the cab. Be certain that the steps, hand rails and your shoes are clean and dry.

NEVER hold on the control levers and the steering wheel of the machine to get into the operator's cab. Always use the hand rails.

Jumping out of the machine is very dangerous. Be sure that the engine is stopped and the machine is parked properly prior to leaving the cab.



4.4. BEFORE STARTING THE ENGINE

A) APPLY THE PARKING BRAKE

You must engage the parking brake before leaving the machine. If it has not been applied already, apply it immediately.

CAUTION

Never allow anyone near the machine or in the danger zone when you work or lower the attachments on the ground. They can get crushed under the attachments and get caught in the linkages. Failure to pay attention could result in serious injury or death.

WARNING

The parking brake must always be in operating condition due to emergency use. Before moving the machine perform the parking brake test (refer to section 4.8.1) and be sure if it already works. Otherwise never move the machine.

B) LOWER THE ATTACHMENTS ON THE GROUND

Loader and backhoe attachments should be placed on the ground, or the backhoe should be blocked in its transport position. Attachments will lower down by their own weight when control levers are operated. Operate the control levers carefully in order to control the speed of lowering.

C) PERFORM PRE-START CHECK

Perform pre-start check prior to starting the engine in order to improve your machine's durability as well as your safety.

1) Check for leaks of fluids such as oil, water, coolant, fuel under and around the machine. In case of existence of poured fluid get help from Hidromek authorized service.

2) Check the engine and the transmission for oil leakage and dirt.

3) Check oil, fuel and coolant levels. If necessary fill them to the required levels.

4) Check the radiator and its part against dirt and leakage. Check the condition of hoses, pipes and fins.

Check the condition of all guard panels on the machine.

5) Be sure that your hands and shoes are free of dirt, mud and water.

Interior of operator's cabin, particularly steering wheel, pedals and control levers must be free of any contaminant.

WARNING

All controls of the machine must be free of oil, grease, diesel fuel, dirt, ice, water or moisture. Otherwise your hands and feet can slip during operation and cause you to lose control of the machine. Failure to observe this could result in serious injury or death. Loose or suspending objects may drop or thrown about the operator's cabin and hit you or obstruct the controls of the machine. You may lose control of the machine which could result in serious injury or death.

6) DO NOT allow loose and hanging objects such as purses, bags, containers, hand tools etc. in the cab or secure them if you have to,

7) ROPS structure of the cabin should be checked for any wear and damage. Ask your HIDROMEK Authorized Service to repair possible damages. Inspect for any missing, loose or damaged fasteners of the cab. Consult your authorized Hidromek service for any problem.

8) All the lights, horn, gauges, switches, windscreen washer and wipers must be controlled for their proper functioning.

9) Check the seat belt and its connection hardware for any wear and damage.

D) THE POSITION OF THE SEAT

The operator's seat should be positioned to allow the operator to operate all controls easily and comfortably.

Make sure you are able to operate the throttle pedal comfortably through its total course while you are seated properly and your safety belt is attached.

E) ADJUST THE MIRRORS

The mirrors on the operator's cabin should be adjusted to allow clear rear vision after positioning the operator's seat properly.

4.5. STARTING THE ENGINE

WARNING

Always fasten your seat belt before starting the engine.

A) The section “BEFORE STARTING THE ENGINE” must be read and strictly followed.

B) Pull the throttle lever to minimum (idle) position. Make sure all the electrical instruments such as the A/C, the radio/cassette player, heater, lights etc are switched off.

C) Start the engine.

WARNING

On engine, DO NOT use ether fluid as a starting aid.

If it is necessary to work in a closed area, the area must be well ventilated. Inhaling exhaust gasses is dangerous for health and it may result in death suddenly without awareness. Exhaust gas has poisonous and odorless components. When you feel yourself bad shut the engine down and go out for fresh air.

1) Starter switch key should be turned to the ‘pre-heat’ position “II” and kept at this position for max. 20 seconds to warm the Engine air intake manifold if the ambient temperature is 0°C (32°F) or lower.

2) Press the throttle pedal slightly to assist starting. Turn the starter switch to the ‘START’ position and keep it at that position until the engine starts.

WARNING

If the engine fails to start in 20 seconds, NEVER hold the key further at the ‘START’ position ‘III’, as this could damage the starting system severely. Allow 2 minutes for cooling of the starter then re-start.

3) Starter key must be released immediately after the Engine starts. The starter switch will return to “I”(ON) position itself.

4) Take your foot off the throttle pedal to reduce the Engine RPM.

WARNING

Never operate the cold engine at full throttle. Run the engine at idle RPM until it reaches normal operating temperature.

D) Verify that all warning lights go out after the engine starts. No warning light should be lit except parking brake light. The Engine RPM should not be increased before the ‘engine oil pressure low’ light goes out. Pay attention to the status of audible alarm that should stay silent normally.

E) Machine must be warmed up to increase the temperature of hydraulic oil. Operate the attachment several times to warm up the hydraulic oil.

WARNING

If one or more of the warning lights (except for the parking brake warning light) turn on while the engine is running, stop the engine as soon as possible after taking essential safety precautions.

The machine should be utilized in normal rated operating conditions as soon as it is put into operation. It is not necessary to run the engine by operating it for extended periods of idling since this will cause glazing of the internal surfaces of the cylinder walls and result in extensive oil burning.

An engine recently put into service can be operated under its rated maximum load as soon as the coolant temperature is above 60°C (140°F). NEVER leave the engine idling for extended periods without load. Running the engine at 1000–1200 RPM for about 5 – 10 minutes will be enough for the engine to warm up. This period may be 5 minutes longer in winter.

4.6. DRIVING THE MACHINE

Machine is driven by using the travel lever located on the left hand side of the operator's seat.

Move the travel lever to the desired travel direction. To turn right when traveling forward, move the lever forward and right.

To turn left when traveling forward, move the lever forward and left.

Push the travel lever right to make a clockwise rotation of the machine around its centre axis.

Push the travel lever left to make a counter clockwise rotation of the machine around its centre axis.

- Always keep the machine under control when you drive.
- Be cautious for obstacles and dangerous situations.

After engine warmed up move the machine as told below.

A) CONTROL YOUR SEAT

Be certain that you are sitting properly. Make sure that your seat is adjusted correctly and you can comfortably access all machine controls.

B) FASTEN YOUR SEAT BELT

Make sure your seat belt is not damaged and worn. Buckle up properly for your own safety.

C) SELECT THE DRIVE DIRECTION WITH THE TRAVEL LEVER AND MOVE THE MACHINE**! WARNING**

Serious injury or death may occur if position of the forward/reverse lever is changed while the machine is in driving mode. The driving direction may be changed suddenly without any indication to others around. Operate the lever in accordance with the manufacturer's instructions for correct use.

1) Make sure that the attachments are put into their positions for travel.

2) Move the travel lever at the desired direction. Machine will move to the same direction. Push the throttle pedal down to increase the speed or move the travel lever further, machine speed will increase in both way.

! WARNING

Stop the machine if engine or drive train is faulty. Do not use the machine before the problem is fixed.

! WARNING

Use throttle pedal only to adjust the engine rpm while driving. Never use manual throttle lever to set the engine rpm while driving.

4.6.1. TRAVELING IN REVERSE DIRECTION**! WARNING**

Make sure that reverse gear sound is working. Always sound the horn before starting the machine.

There may be blind spots when traveling in reverse, therefore make sure that nobody is in the working area before working with the machine.

Ask for assistance of a second operator if visibility is not adequate or if there are hazardous conditions.

Do not drive at high speeds when traveling in reverse.

4.7. JUMP STARTING THE ENGINE

WARNING

Never use a battery if the electrolyte is frozen. Always keep the battery charged to protect its electrolyte against freezing. Batteries release a highly flammable gas that can explode. Never smoke during the electrolyte level check.

2 machines should not contact each other during jump-starting from an external source to avoid any probability of sparking.

All independent circuits that are not related to the starting process should be turned off (lights and hazard warning lights).

A booster cable must not be fitted directly to the starter motor. If you jump start in this condition, neutral gear safety switch will be by-passed. Serious injury or death may result due to movement of machine by itself if the machine was left with the gears in engaged position.

Determine positive(+) and negative(-) poles of each battery prior to attaching them.

The booster cables must be of adequate capacity and in good condition, and the pole clips must be attached firmly. One booster lead must be attached at each time.

Do not wear and keep away bracelets and jewelry from the jumper clamps and battery poles.

The electrical system of your machine is 12 volts negative earth. Do not use booster batteries whose voltage is unknown or higher than 12 volts. Otherwise, the electrical system of your machine will be damaged.

WARNING

The safest way for jump-starting an engine with discharged battery can be assured by two people carrying out the following process. The second person removes the jumper cables so the operator does not have to leave the operator's cabin while the engine is running. When starting the engine, make sure you are properly seated in the operator's seat and your safety belt is attached. Also make sure that all controls are in NEUTRAL.

A) Make sure that the parking brake is applied and locked.

B) All switches in the Operator's Cabin must be turned off.

WARNING

Never allow anyone to stand on the machine or in the danger zone before you lower the attachment to the ground. Otherwise there is a danger of being crushed resulting in death or heavy injury.

C) Lower the loader arm to the ground. Loader arm can be lowered without a need to start the engine, by operating the loader arm control lever. should have been set to earth. Make sure the loader safety strut is engaged if the loader arm is raised. (See Section: ENGAGE ATTACHMENT SAFETY LOCKS)

D) Attach the clip of positive jumper cable to the positive (+) pole of the machine battery. Attach the clip on its other end to the positive (+) pole of the booster one.

E) Attach the clip of negative (-) jumper cable to a proper place on the Engine of the disabled machine. Connect its other end to the negative (-) pole of the booster battery.

F) Start the engine.

G) Remove the negative (-) pole of the cable from the machine then remove it from the booster battery.

H) Remove the positive (+) cable from the machine then remove it from the booster battery.

WARNING

Starting the engine by shorting across starter terminals is dangerous and may also damage the system.

Start the engine only from operator's seat with transmission in neutral and parking brake applied.

4.8. BASIC PRECAUTIONS FOR OPERATION IN COLD AND HOT CLIMATE

4.8.1. IN COLD WEATHER

In cold weather conditions, pay attention to the following precautions to enable easy start-up and operation without possible damage.

- 1) Use engine lube oil of correct grade as per 5.6 TABLE of LUBRICANTS & FLUIDS of this manual. Fill in engine lubricating oil at correct viscosity. Hidromek recommends the use of a higher viscosity index oil.
- 2) Use the correct viscosity hydraulic oil in accordance with the temperature range, preferably with a high viscosity index in the hydraulic system.
- 3) A low temperature diesel fuel should be used if available. Such fuels have lower pour and waxing point than normal diesel fuels.
- 4) Make sure that the battery is fully charged. Switch off all the electrical instruments such as the A/C, the radio/cassette player, heater, lights etc.
- 5) Proper coolant mixture of 50% antifreeze and 50% water must be filled in the cooling system. This will prevent cooling system from freezing and will also help prevent corrosion.
- 6) Refuel the fuel tank after each working shift. This reduces the possibility of water condensation in the fuel tank.
- 7) When the machine will not be operated for an extended period of time it must be parked in a closed space or adequately covered in such a way that it will not be subjected to cold weather conditions.
- 8) In extremely cold weather, additional means of heating e.g. fuel heater, oil heater or coolant heater may be needed to assist starting and to prevent freezing.
- 9) Prior to starting the engine, wipe out the snow around the air intake and on the hood to prevent entry of snow into the air filter.
- 10) Hold the starter key at Pre-heating position "II" for a period of no more than 15 seconds.
- 11) Drain the water accumulated in the water-fuel separator at the end of every work shift.

4.8.2. IN HOT WEATHER

The following precautions must be taken to avoid any damage during operation in hot weather:

- 1) Fill in engine lubricating oil at correct viscosity.
- 2) Use the correct viscosity hydraulic oil suitable for temperature range of the region. Use of high viscosity index oil in the hydraulic system will improve change of viscosity with temperature. If lower viscosity grade oil is used, higher temperatures will further reduce oil viscosity resulting in cylinder creeping, oil leakages, loss of power and will also affect load bearing capacity of the oil.
- 3) Use correct mixture of coolant and anti-freeze. This will increase freezing and boiling points of the water, and prevent cooling system from corrosion and also from calcification.
- 4) Perform regular inspections on the cooling system. Be certain that the coolant level is correct and no visible leaks exist. Frequent topping up of the cooling system accelerates calcification in the system which will result in reduced heat transfer and hence overheating.
- 5) Clean radiator fins of engine, transmission and hydraulic system periodically and keep them free of contaminants. Keep the machine clean.
- 6) Inspect the condition and tension of fan belt periodically.

4.9. PREPARATIONS FOR TRAVEL

If the machine is required to move on the public roads or highways, follow the procedure below :

- 1) Put the backhoe into the position as shown in the figure below (Figure A).

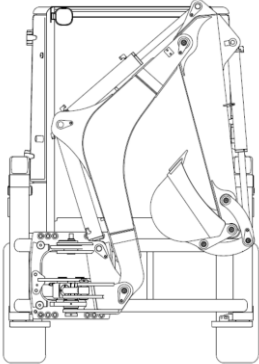


Figure A

- 2) Engage the backhoe boom lock and slew lock to secure the boom.
- 3) Engage backhoe safety lock lever.
- 4) Retract the stabilizers fully and fit securing pins. (Figure B).

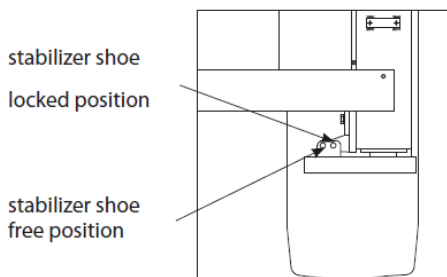


Figure B

- 5) Roll back the loader bucket fully as shown in figure below and raise it about 30 cm (12") from the ground (Figure C).

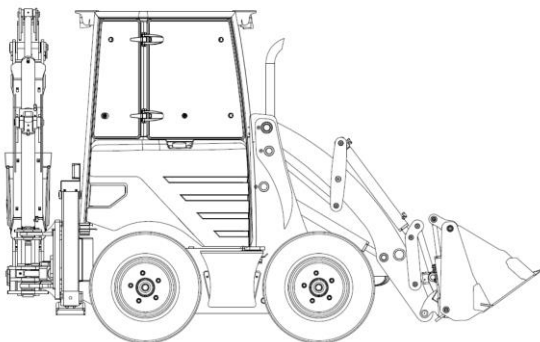


Figure C

- 6) If you have to drive on highways at dark, check both headlights and tail lights before you start traveling. Do not drive the machine if the headlights and tail lights are not working.

- 7) Check left and right turn signal lights. Do not drive the machine if the signal lights are not functioning.

- 8) Take all other safety precautions imposed by the traffic and local laws.

- 9) Check rotating beacon.

**WARNING**

Never forget to engage backhoe safety lock lever after engaging backhoe lock in the travel position. If not, personal injury or death as well as equipment damage may result.

**WARNING**

Local traffic rules may require that a bucket teeth protector be used while driving on the public roads. Observe the local traffic rules and regulations when driving your machine on the public roads.

**WARNING**

If the machine will have to travel with a breaker installed, pay attention to stability as the breaker is much heavier than the bucket.

**WARNING**

This machine has a hydrostatic transmission. That means travel function is provided by hydraulic power. As a result, machine may slide to right or left during travelling forward or reverse. This is not a failure. If you need to drive the machine on the highway, be careful about this issue.

4.9.1. TESTING THE PARKING BRAKE**⚠ WARNING**

Before performing the Parking Brake Test make sure that test area is clear of any person or object that might cause any accident. This may result in death, injury and material damage. Take necessary safety precautions. The Parking Brake Test should not exceed 30 seconds.

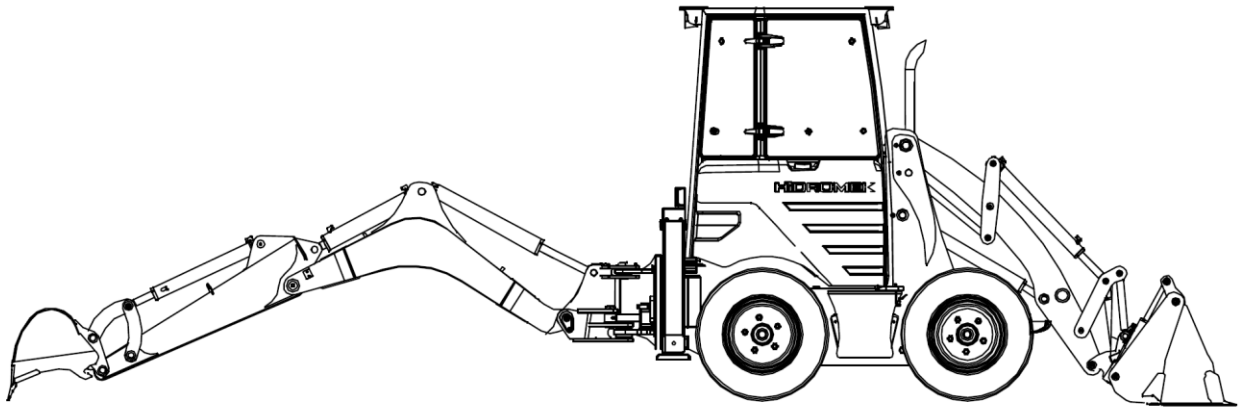
1. Park the machine on a hard and level surface. Sit properly on the operator's seat and attach your safety belt.
2. Start the engine; raise the attachments to driving position.
3. Push the parking brake button on the right hand side console to apply the parking brake.
4. Move travel lever slowly and thoroughly to forward. Machine should not move.
5. Push to the throttle pedal and set the engine speed to max. Machine should not move.
6. Set the engine speed to idle and set the travel lever to neutral position.

⚠ WARNING

If the machine starts moving during this test, stop the test process. Do not use the machine before parking brake system is checked and approved by Hidromek Authorized Service.

7. If the machine doesn't move parking brake is normal.
8. Lower the attachments to the ground and stop the engine.

4.10. STOPPING and PARKING THE MACHINE



⚠ WARNING

Wrongly parked machine can move by itself suddenly while the operator is away. Follow the instructions in this book to park the machine correctly.

The machine must be stopped at firm and level ground. Always extend the stabilizers. Parking the machine with the backhoe extended is recommended if there is enough space. Place the loader bucket and backhoe attachment as seen in the figure.

1) STOP THE MACHINE

Remove your foot from the throttle pedal and put the travel lever to neutral position to stop the machine gently.

2) APPLY THE PARKING BRAKE

Apply the parking. The parking brake warning light will light up.

Parking brake warning light will switch off when the parking brake lever is released.

3) EXTEND THE STABILIZERS

Extend the stabilizers to lift the rear wheels off the ground.

4) LOWER THE LOADING ARM & BACKHOE TO THE GROUND

Positioning the machine as shown in the figure is recommended; backhoe extended and the loader and backhoe buckets pressed to the ground. All wheels will off the ground on stabilizers and two buckets at both ends.

STOP DANGER

Never allow anyone to stay on the machine or in the danger zone prior to bringing the attachments down to the ground. Serious injury or death can result if this is not observed.

5) STOP THE ENGINE

Stopping the engine immediately after it has been working under load can result in overheating and accelerated wear of the engine components.

If the engine has been operating at high rpm and/or high loads, run at low idle for at least three minutes to reduce and stabilize internal engine temperature before stopping the engine.

Avoiding hot engine shutdowns will maximize turbocharger shaft and bearing life.

⚠ WARNING

Do not throttle up instantly prior to shut down. This may cause damage on the turbocharger bearings as it will lack lube oil while at high speed.

6) TURN OFF ALL THE SWITCHES

Make sure all switches are in 'OFF' position before leaving the machine. Turn on hazard warning or parking lights whenever needed. Remove and take the starter key with you.

7) LEAVE THE MACHINE SECURELY

Hold the grip bars and use the steps while you are getting off the machine. Shut and lock doors and all windows prior to leaving the machine. Be sure to have the fuel tank cap locked.

OPERATION

4.11. ENGAGING ATTACHMENT SAFETY LOCKS

Front and rear articulating attachments must be locked for safety reasons during servicing and transportation.

WARNING

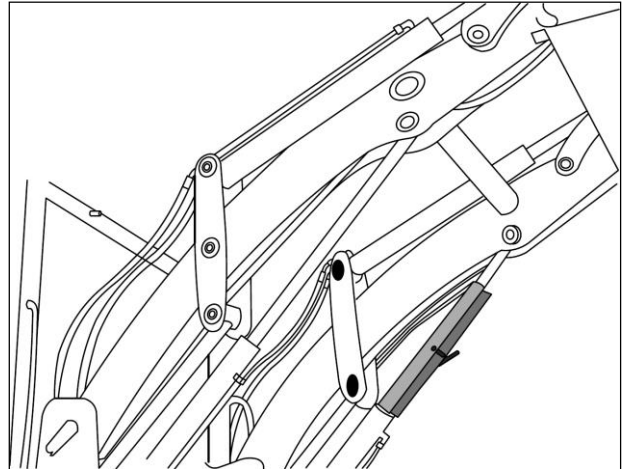
Before working on the backhoe loader with the loader arm raised, always engage the loader arm safety strut. The loader arm can drop suddenly and may result in serious injury or death.

For safety of operators and servicemen there is a red colored safety lock attached in front of the front panel. Safety lock is a safety component which must always be kept functionable with the machine.

This component is used to hold raised loader arm in the air and prevents it from falling during servicing. It will be necessary to raise loader arm for servicing components in the engine compartment. The safety strut must be placed securely to prevent the raised loader arm from falling.

When it is not used it must be tightened with its screw and kept in its storage place in front of the machine.

The following paragraphs outline procedures to engage and disengage the safety strut.



4.11.1. ENGAGING LOADER ARM SAFETY STRUT

1. With the machine on firm and level ground, lower the loader arm to the ground. The lift cylinder rods will be in retracted position.

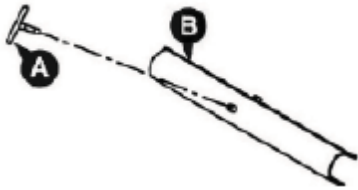
2. Press the parking brake switch. Turn the starter switch to '0' (OFF) position to stop the engine. Remove the starter key and take it with you.

3. Engage the safety lock of loader arm control levers. Leave the cab. DO NOT allow anyone to enter the cab for your own safety.

WARNING

The loader arms will descend suddenly if control levers are moved even if the engine is shut down. This may cause death or severe injury.

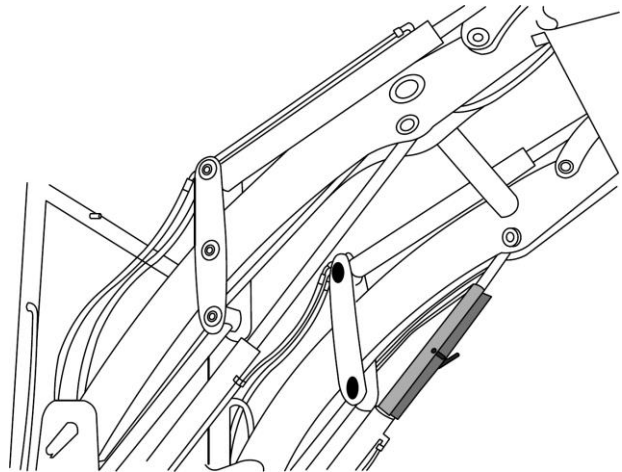
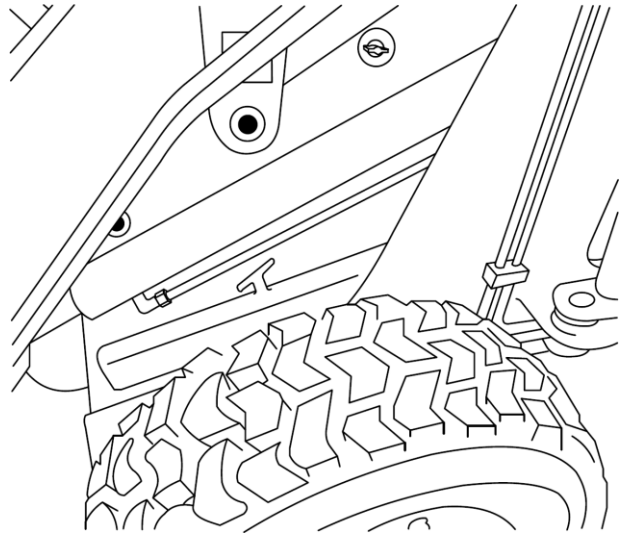
4. Unscrew the anchor bolt (A) and remove the safety strut from its stowing position on the front side of the loader arm.



5. Take the safety strut out.
6. Get in the cab and start the engine.
7. Raise the loader arm.
8. Ask another person to place the safety strut on the rod between the loader arm and the top end of the lift cylinder.
9. Screw anchor bolt (A) on the safety lock by turning it clockwise.
10. Gently lower the loader arm until the safety strut is in supporting position between the cylinder cap and the loader arm. Check if the safety strut stays correctly on the cylinder.
11. Stop the engine, engage the loader arm control lever lock, take the starter key and leave the cab to begin servicing. DO NOT allow anyone to enter the cab for work safety. It is recommended to lock the cabin doors from the outside. Or place a DO NOT OPERATE tag on the operator's control console.
12. Check to make sure that the strut is secure.

4.11.2. DISENGAGING SAFETY STRUT

- 1- Return to the cab, start the engine, release the control lever lock and raise the loader arms to free the safety strut.
- 2- Stop the engine, engage the lever lock to secure the loader arms, remove the starter key and leave the cab. Make sure the parking brake is applied.
- 3- Remove the safety strut.
- 4- Return to the cab and lower the loader arms to the ground. Stop the engine if it is running and leave the cab to stow the safety strut. Secure the strut with its fastener as shown in the figure.



! WARNING

Before dealing with the safety strut, make sure that the area under the loader arm and the attachment is clear of all personnel or any object that might be crushed in case the loader arm falls accidentally.

! WARNING

The loader arm can drop suddenly and kill or cause serious injury. Never leave the cab to disengage the safety lock while the engine is running. Do not allow anyone in the cab or near the machine while you perform the operations explained in this section.

OPERATION

4.11.3. ENGAGING BACKHOE BOOM LOCK

When looked from the back of the machine, there is a rigid pin at the right corner to engage the backhoe boom lock. Once the boom is connected to the pin, it prevents backhoe boom from falling and slewing abruptly.

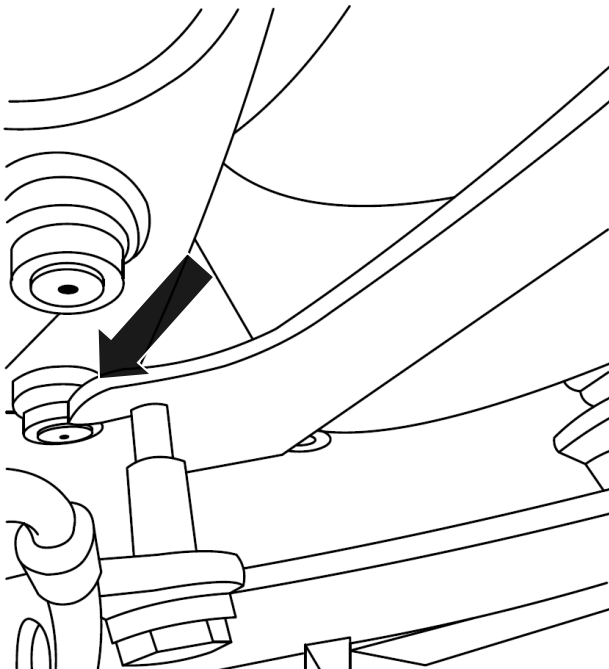
WARNING

Always lock the backhoe attachment before driving on the road. Backhoe boom may drop or slew suddenly causing serious injury or death as well as material damage.

This action is done manually from the cab, operator should observe the intervals carefully through the back window when controlling the attachment.

The following paragraphs outline procedures to engage the backhoe boom lock when machine is parked and engine is running :

1. Lift the boom up.
2. Lower the arm.
3. Close the bucket completely.
4. Slew backhoe group to bring it vertical to the sideshifting frame.
5. Slightly lower the boom and observe if the pin gets inserted to the slot of the bucket.



4.11.4. DISENGAGING BACKHOE BOOM LOCK

WARNING

When disengaging backhoe boom lock make sure that the area under the loader arm and the attachment is clear of all personnel or any object that might be crushed in case the loader arm falls accidentally.

Do not let anybody enter the danger zone. Backhoe can suddenly fall down or turn. It will result in heavy injury or death.

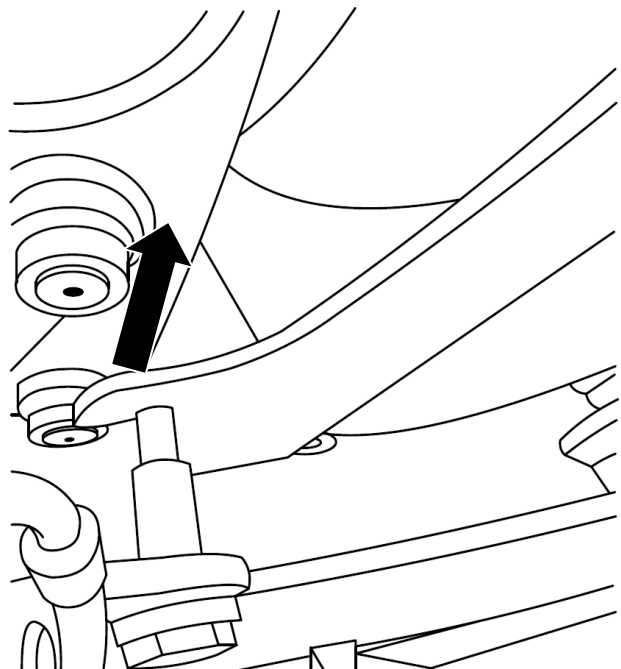
1. Slightly raise the boom. Free the pin from the slot of the bucket.
2. Slew the boom to the left and disengage the boom lock.

WARNING

Perform the procedures of engaging and disengaging backhoe boom lock in order. Serious injury or death may result from operation of the backhoe.

WARNING

When moving backhoe attachment make sure no one is standing in the danger zone as there is a risk of being crushed between components due to movement of the backhoe. Allow adequate space for safe movement of attachments.



4.11.5. STABILIZER SHOE LOCK

Engage the stabilizer shoe lock pin after locking the backhoe attachment.

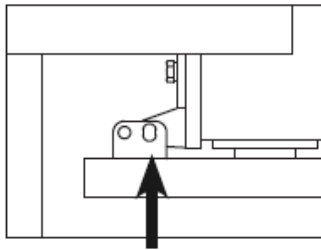
The locking pin is located in the free store hole on the shoe pads.

Disengage the lock pin from its free store hole by removing the safety clips first.

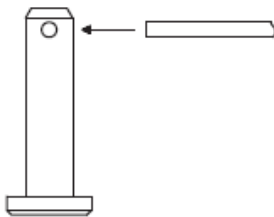
Retract the supports fully in.

Secure the shoe pads to the supports and install the clips.

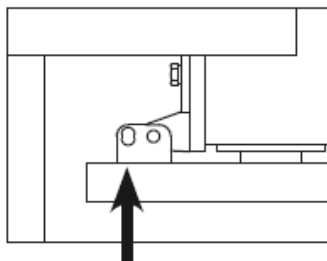
Always use the safety clips when locking the pins.



Stabilizer shoe locked position



Stabilizer shoe pin & clips



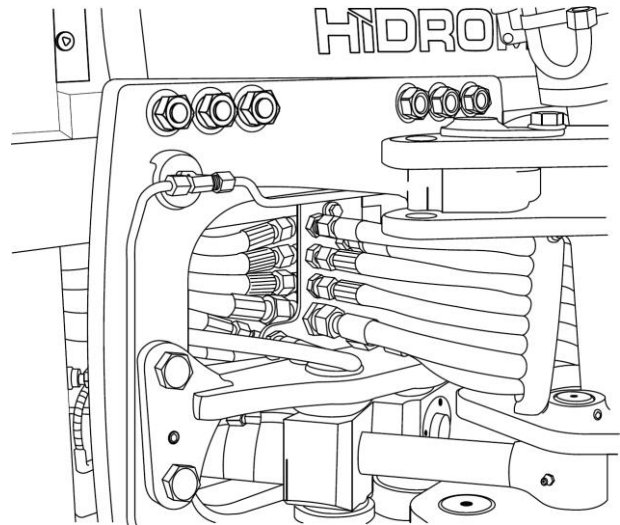
Stabilizer shoe free position

4.12. CONTROLLING HYDRAULIC CLAMP CYLINDERS

The hydraulic clamp switch is located on the right hand side instrument panel. Hydraulic clamps are normally tightened, and must be released by pressing on the switch when required.

1)RELEASE

Press on the upper part of the Hydraulic Clamping Switch. A red light bar will illuminate indicating that the switch is "ON" after the rocker switch is pressed. In this position, oil is discharged to the tank and the Clamp Cylinders are released.



2)TIGHTEN

Press on the lower part of the Hydraulic Clamping Switch to start clamping. The red light bar will go off. While the switch is in this position a backhoe function must be operated to supply oil to the hydraulic clamps. For example roll the bucket fully in and then out. Continue moving the lever until cylinders are clamped onto the side shift frame.



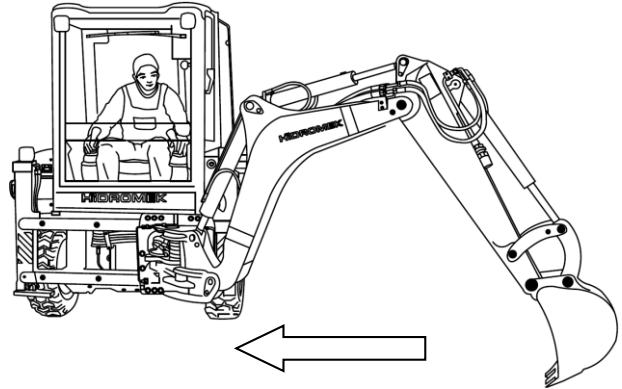
WARNING

Operate hydraulic clamping switch only for side shifting the backhoe.

4.13. SIDESHIFTING THE BACKHOE**⚠ WARNING**

Make sure that the side shift frame of the backhoe is free of any dirt and mud prior to side shifting operation.

- 1) Park the machine on solid, dry and level ground first. Extend stabilizers as necessary to level and stabilize the machine.
- 2) Position the backhoe so that the bucket can be thrust on the ground right behind the machine.
- 3) Release the clamps by pressing on the Hydraulic Clamping Switch.
- 4) Lower and raise the boom a few times slightly to loosen the kingpost on the side shift frame .
- 5) Raise and slew the backhoe opposite the desired side: Rotate left if you will side shift to right. Rotate right if you will side shift to the left.
- 6) Put the bucket on the ground with the teeth penetrating into the soil. The dipper and the boom must be at a right angle (90°) to enable smoother movement of the kingpost on the frame.
- 7) Move the bucket lever to “bucket out” position. The kingpost will be pushed along the side shift frame as the bucket moves out. For smooth operation, the kingpost must be vertical to the frame. Move the boom up and down a little if the kingpost is jammed on its course.
- 8) Tighten the clamps.
After the kingpost has taken the desired position, press on hydraulic clamping switch and move the bucket or dipper lever full stroke to tighten the clamps.



4.14. THE LOADER OPERATION

To use HMK 62 SS backhoe loaders safely and efficiently, you must be a skilled operator with a valid operator license and be familiar with the machine and its functions.

The aim of this manual is to train the operator about the machine and its functions for efficient and safe operation. It is not aimed as an operator training material. Refer to more specialized books on operation for more competence.

If you are a beginner, you must be trained to gain competence on operating a backhoe loader before you attempt to operate HMK backhoe loaders. You can fail in your job and you yourself can become a danger for your environment if you do not have sufficient operating skills.

Remember that you will be driving the machine while you are working with the loader. Be aware of people around and dangers that might exist in a job site.

Make sure that you are properly seated in the operator's cabin when operating the machine. Take the backhoe to travel position before you start working with the loader.

Use extreme caution when operating the loader on a slope and keep the bucket as low as possible. This will ensure maximum stability by lowering the machine center of gravity and will improve visibility. Drive backwards while you are driving down hill with a fully loaded backhoe bucket if possible. Drive forward when you have to drive up hill with a loaded backhoe bucket.

WARNING

Before working with loader or backhoe buckets, check the tightness of all the bucket teeth. Any loose or missing tooth would result in reduced working performance or broken tooth.

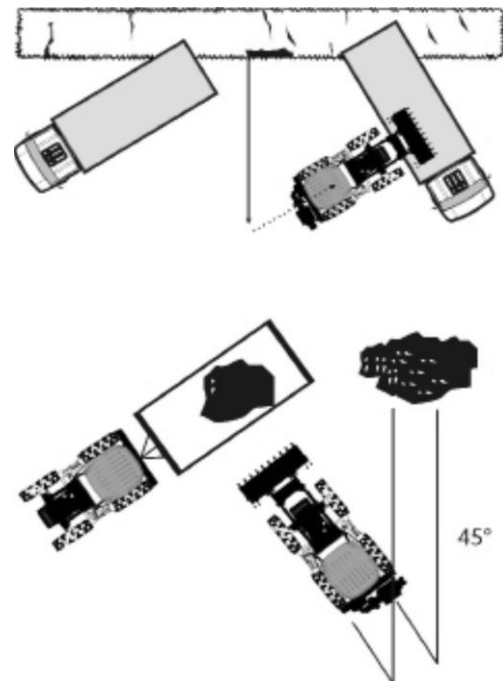
4.14.1. LOADING TRUCKS

Place the truck(s) at an angle of about 45° to the material to be loaded as shown in the figure. This will minimize maneuvering requirement of the machine. Allow sufficient distance so that the backhoe bucket can be raised to its dumping height as you drive without a need to slow down.

Lift the bucket high enough to clear the side of the vehicle. Approach as close to the side of the vehicle as possible before dumping.

Dump the bucket at the center of the body of truck if the length of the body is the same size with the bucket. If the hauler body size is twice the bucket size, dump the load in the front section of the truck first.

DO NOT dump the bucket abruptly, but discharge gradually. To remove sticky material, shake the bucket by moving the control lever back and forth quickly.



⚠ WARNING

When loading from stockpiles and banks with overhang sections first start at the overhang sections. This will prevent loose and solid materials from falling on the machine. If not, you can be buried under the sliding material or injured due to falling rocks and stones.

GENERAL HINTS

Keep the backhoe in travel position while working with the loader. While working on slopes with bucket loaded, drive backwards when going downhill and drive forward when going uphill.

Carrying loader bucket (full or empty) close to the ground will improve operator's visibility and machine stability. Use bucket teeth to remove hard material in the ground.

To improve productivity; fill the bucket in one pass. Do not force the loader bucket down to the ground as this result in loss of performance and increased fuel consumption. It will also accelerate bucket wear, damage the ground surface and mix material with the ground dust or snow.

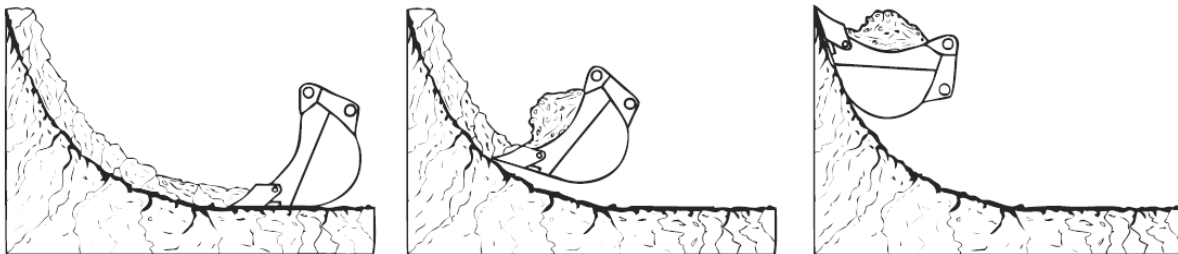
LOADING THE BUCKET

When approaching a loose stockpile on hard surface, skim the ground with the bucket as you drive forward. Enter the pile at the bottom at bucket level, and lift and roll back the bucket simultaneously as you proceed. This will improve the breakout force, the work efficiency and machine stability.

Fill the bucket fully and fill it in a single pass for better productivity.

Tilt the bucket backwards fully to prevent spillage of material while driving with fully loaded bucket.

When loading from the banks with tight material start at the top and work down to improve breakout force. Take the overhang sections first to avoid falling of loose material and rocks on the machine, then proceed downward.



4.15. THE BACKHOE OPERATION

! WARNING

To use HIDROMEK backhoe loaders safely and efficiently, you must be a skilled operator with a valid operator license and be familiar with the machine and its functions. You are expected to completely read and understand this book and practice on operating HMK backhoe loaders before starting to work with it at a job site.

The aim of this manual is to train the operator about the machine and its functions for efficient and safe operation. It is not aimed to serve as an operator training material. Refer to more specialized books on operation for more competence.



4.15.1. HINTS ON OPERATION OF THE BACKHOE

- 1) Position the machine in the excavation site properly to obtain machine stability and work economy. Unlock both the boom and bucket.
- 2) Tilt the loader bucket forward, lower it to the ground so as to lift the machine and clear the front wheels off the ground.
- 3) Lower the stabilizers to lift the rear tyres off the ground and adjust the stabilizers until the machine is level. NEVER push the stabilizers down excessively since this may cause breakage or bending of the inner sections.
- 4) Bring the drive control lever to neutral position. Apply the parking brake. Rotate the seat 180 degrees counter clockwise to backhoe control position and lock the seat. Remove backhoe safety locks.
- 5) Set the engine speed to 1500 rpm by using the hand throttle lever. This speed will give maximum torque for efficient working. Working at higher engine speeds will result in excessive fuel consumption.
- 6) Do not let cylinder pistons hit the stroke ends. This practice will help improve the service life of pins, bushings and cylinders. Bring the control levers to neutral when the stroke end is approached. Do not insist on actuating the control levers if the machine can not tear the material out. This will cause overheating of the hydraulic oil and increase fuel consumption.
- 7) Do not overload machine beyond its capacity.
- 8) Check the hydraulic oil temperature while working. Stop the work if it gets too hot.
- 9) In order to shift the backhoe to the desired position refer to the chapter "SIDESHIFTING THE BACKHOE".

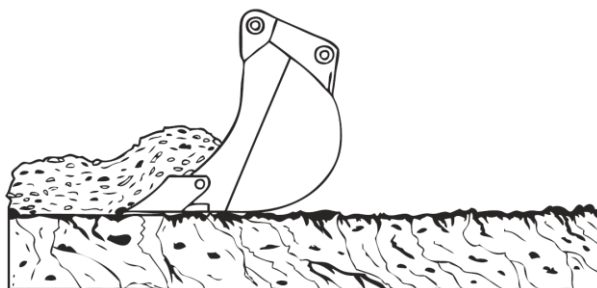
! WARNING

Before working with loader or backhoe buckets, check the tightness of all the bucket teeth. Any loose or missing tooth would result in reduced working performance or broken tooth.

4.15.2. DIGGING METHOD

A CORRECT

Bucket teeth are parallel to the ground. Bucket is filled efficiently.



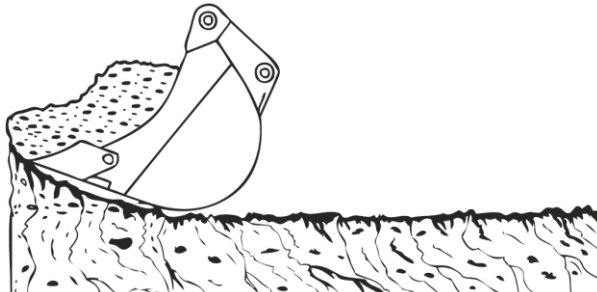
B WRONG

Bucket is being dragged down thus slowing the speed of filling the bucket.



C WRONG

Bucket is being pulled upwards and is not filling efficiently.



4.15.3. EXCAVATION ON SLOPES

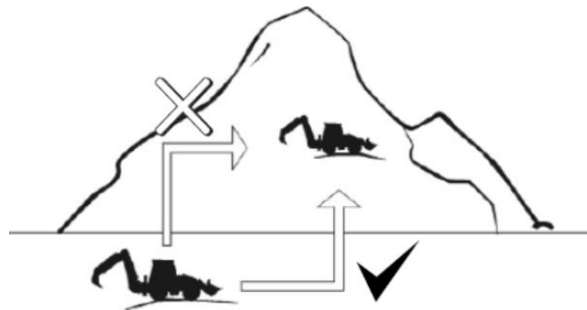
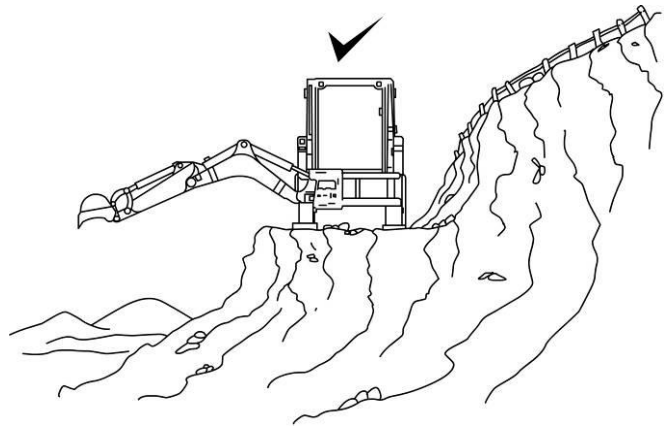
When excavating on slopes, level the machine using the stabilizers and position the backhoe at the center of the frame. Make sure that you are seated properly, the seat is secured and your safety belt is attached. Avoid digging and dumping the load downhill. Do not slew the loaded bucket or unload downhill at excavating position. This can affect the machine stability and the machine can tip over. Dump the material uphill from the excavation whenever possible.

If the slope is steep, use loader bucket to level the ground if applicable. Dump some soil the downhill to level the ground as shown in the figure. When moving the machine to the excavation spot on a bank, drive the machine on level ground as near as possible to the excavation point and then drive uphill to avoid the machine rolling over. Make sure that fuel tank is full to avoid air going into the combustion system due to lack of fuel.

Pay attention and respect maximum gradability of the machine and the engine, otherwise the lubricating capability of the engine will be affected.

⚠ WARNING

Working on slopes may be dangerous if safe working method is not used. Always start digging at the top of the hill and continue downwards. Do not slew fully loaded backhoe bucket towards the incline as this may endanger the machine stability.

**4.15.4. LOWERING THE ATTACHMENTS IN CASE OF UNEXPECTED POWER CUT-OFF**

Should the diesel engine shut off, or the hydraulic system stop functioning, or the hydraulic pump fail, or the hydraulic oil dumps due to an unexpected reason while working with attachments, it is still possible to lower the attachments to the ground with their own weight by actuating the hydraulic control levers in their normal operating way.

Push loader arm control lever to "LOWER" position if working with loader arm.

Actuate both the boom and the dipper control levers to lower the bucket to the ground if working with backhoe attachment.

4.16. REPLACING ATTACHMENTS**4.16.1. LOADER ATTACHMENT (QUICK COUPLER)****DISASSEMBLING**

Place the machine on a firm and level ground.
 Lower the attachment to the ground. Pay attention to balancing of the attachment.
 apply the parking brake, stop the engine and remove the starter key **AND LEAVE THE MACHINE**.
 Remove the hydraulic connections (1) of the attachment from the machine.
 Pull the levers (2) up separately to release the quick coupler locking pins.
 Return the operator's cab back and start the engine.
 Move the loader control lever and dump the bucket.
 Travel reverse direction when bucket releases from the quick coupler.

! WARNING

Be sure that attachment is correctly supported. As it may roll over do not stay in front or at the rear of an attachment.

Balance the bucket on a firm and level ground and secure it.

! WARNING

Before starting to work with the attachment check if the attachment is correctly mounted to the machine and safety pins and bolts are connected.

ASSEMBLING

Place the new bucket to a suitable position on a level and firm ground.

Lower the loader arm until quick coupler and new bucket/attachment are at the same level. Check that if the locking levers (2) are completely opened.

Slowly move the machine forward to the attachment/bucket. Stop the machine when quick coupler touches the bucket/attachment.

Raise the loader arm and attach the quick coupler to the side of the bucket/attachment.

Fully tilt back the loader bucket and attach the quick coupler.

Stop the machine. Apply the parking brake. Remove the starter key and leave the machine.

Push the levers (2) down and lock the attachment/bucket.

Connect the attachment hydraulic hoses to the hydraulic lines on the quick coupler.

Start the engine.

Move the loader bucket to gain hydraulic pressure.

Check the tightness of the hydraulic hoses.

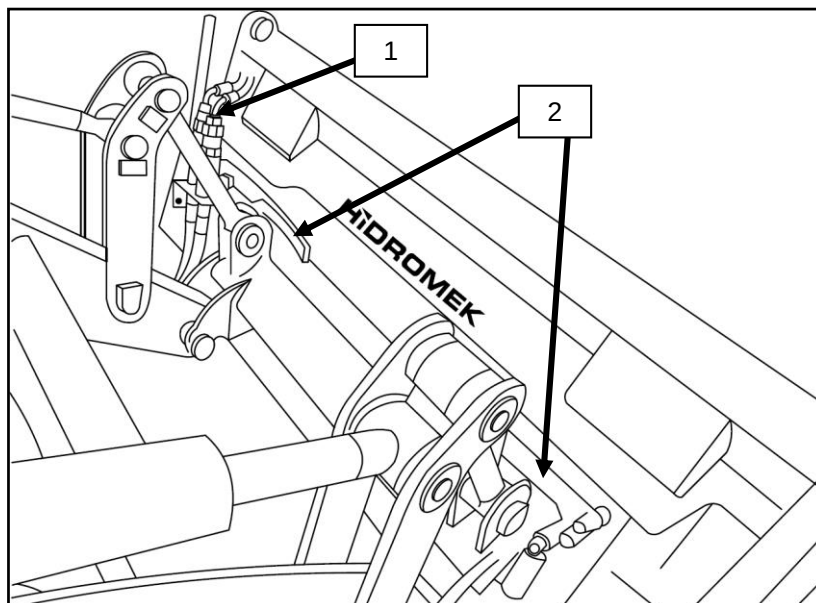
Stop the engine and check for the leakage.

! WARNING

While checking the levels of the pin holes, never insert your hand and fingers in the holes.

! WARNING

Pay extra attention while inserting the pins. Wear necessary safety equipment like gloves, glasses, safety shoes. Flying chips may hurt your eyes. Take precautions when removing the pins to prevent them from flying off the hole.



4.16.2. BACKHOE BUCKET

DISASSEMBLING

Place the machine on a firm and level ground.
Lower the attachment to the ground. Pay attention to balancing of the attachment.
Put the gear to neutral, apply the parking brake, stop the engine and remove the starter key.
Remove the safety bolts and nuts over the mounting pins and remove the pins (1, 6) with aid of a plastic hammer and a smaller pin. Remove the backhoe bucket.

⚠ WARNING

Be sure that attachment is correctly supported. As it may roll over do not stay in front or at the rear of an attachment.

Balance the backhoe bucket on a firm and level ground and secure it.

⚠ WARNING

Before starting to work with the attachment check if the attachment is correctly mounted to the machine and safety pins and bolts are connected.

⚠ WARNING

Pay extra attention while inserting the pins. Wear necessary safety equipment like gloves, glasses, safety shoes. Flying chips may hurt your eyes. Take precautions when removing the pins to prevent them from flying off the hole.



ASSEMBLING

Place the new backhoe bucket to a suitable position on a level and firm ground.

Park the machine on a firm and level ground.

Apply the parking brake, put the gear to neutral.

Inner side of the backhoe bucket should face the machine. Connect the hole (2) and hole (3) with pin (1) after greasing the pin. Secure the pin with bolt and nut.

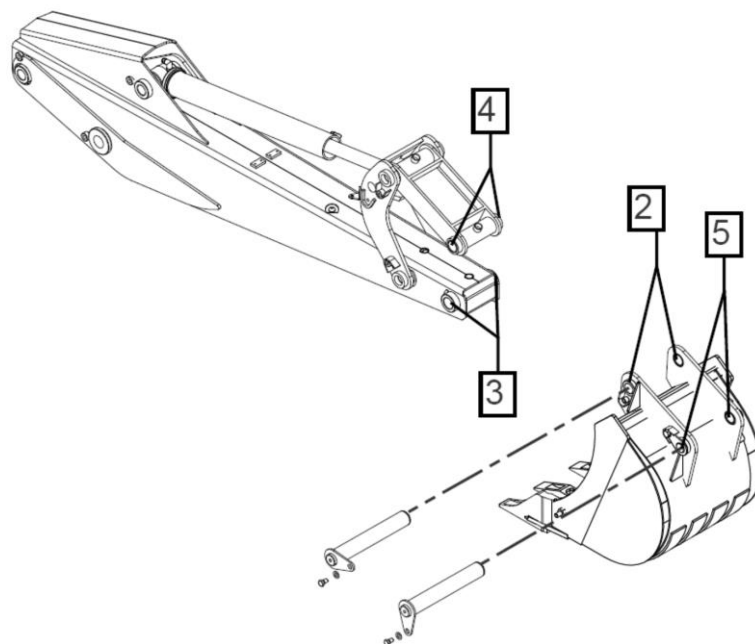
Grease the pin (6) and insert through holes (4) and (5). Secure the pin with bolt and nut.

Bring the arm and boom to travel position.

Stop the engine.

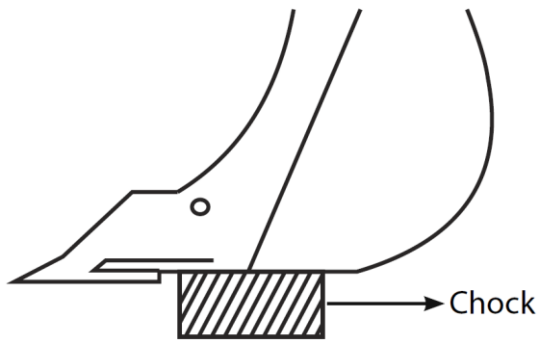
⚠ WARNING

While checking the levels of the pin holes, never insert your hand and fingers in the holes.

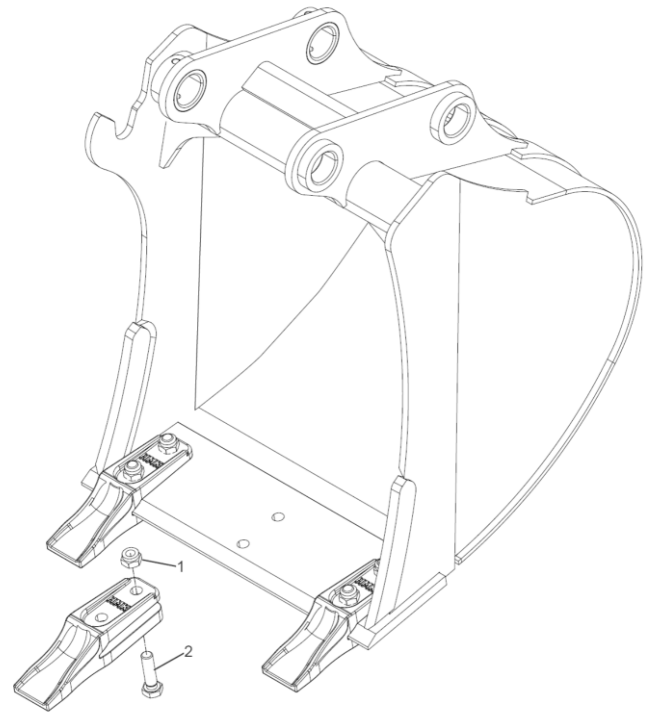


4.16.3. REPLACING BUCKET TEETH

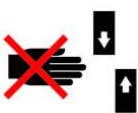
1. Place a suitable chock under the bucket and lower the bucket as shown in the picture. Stop the engine and apply the safety lock.

**Figure 4.20.3**

2. Remove opposite bolts and nuts (1-2) and disassemble the teeth.
3. After removing the teeth, clean their mounting surfaces on the bucket and insert new teeth.
4. Replace the bolts and nuts with new ones and tighten to torques specified in TABLE OF TORQUE VALUES FOR FASTENERS at the end of this manual.

**! WARNING**

Be sure that attachment is correctly supported. As it may roll over do not stay in front or at the rear of an attachment.

! WARNING

While checking the levels of the pin holes, never insert your hand and fingers in the holes.

! WARNING

Pay extra attention while inserting the pins. Wear necessary safety equipment like gloves, glasses, safety shoes. Flying chips may hurt your eyes. Take precautions when removing the pins to prevent them from flying off the hole.



4.17. TRANSPORTING THE MACHINE**! WARNING**

Take into consideration the road conditions (loading clearance of the bridges and tunnels) and traffic rules on the route that the machine will be transported through.

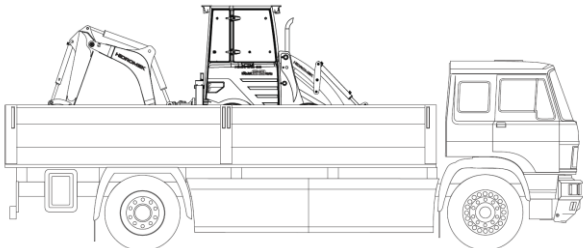
Make sure that you select a carrier vehicle which is suitable for the dimensions of your machine. Refer to "Specifications" chapter.

- 1) Block all of the trailer wheels by wedge blocks before loading the machine onto the carrier.

! WARNING

Inspect the condition of ramps and trailer bed which must be free of sharp objects (eg: nails, bars, broken glass, etc.) or slippery materials (oil, grease, ice, detergent foam, etc.) to prevent any damage to the wheels and to avoid loss of machine control while loading and maneuvering on both the ramp and the trailer bed.

- 2) Be certain that the ramps are strong enough and oriented properly. The ramps should be capable of carrying the weight of the machine.
- 3) Check the ground clearance of the machine to be carried to prevent machine falling from the ramp top.
- 4) Position the loader and backhoe as described in section " PREPARATIONS FOR TRAVEL ". If provided, make sure that the telescopic dipper is secured in retracted position.



- 5) Drive the machine to the ramps slowly after aligning the wheels with the ramp. Drive the machine with extreme care on trailer bed after passing over the ramps.
- 6) Allow sufficient room to lower the backhoe and park the machine.
- 7) Lock the parking brake and put the drive control Lever into neutral position.
- 8) Extend the stabilizers to support the machine on trailer bed.
- 9) Release the backhoe lock after taking necessary safety precautions. Bring the loader arm and backhoe down to the trailer bed and take the position as seen in the figure .



- 10) Observe the maximum height of the machine and trailer combination carefully. They must not exceed the limits of the loading clearance as an obligation for driving on public roads. Position the machine again if necessary.

- 11) Stop the engine.

- 12) Block the machine by putting wedge blocks in both directions of all tyres of the machine to prevent sliding on the trailer.

- 13) Secure the machine by using chains as seen in the figure.

4.18. TOWING PROCEDURE FOR A DISABLED MACHINE

Towing a disabled machine must be the last resort after all repair efforts have been tried.

Machine travel lever will not function if the engine does not operate. Therefore the machine can not be towed.

! WARNING

We suggest you consult an authorized HIDROMEK service workshop before towing the machine.

If transportation of the machine is a must, then lift the machine with a crane as told in the chapter "Lifting By A Crane ".

4.19. LIFTING BY A CRANE

The following procedures are for lifting a standard machine in its delivered state. Modifications that are made on the machine which are affecting the machine weight are not considered in these procedures .

- A) Dump and roll back the loader bucket.
- B) Stop the Engine.
- C) Leave the operator's cabin and get off the machine.
- D) Close all guards, windows and doors.

⚠ WARNING

Always use proper lifting equipment and devices. Use of improper lifting equipment can cause the load to shift or fall resulting in severe damage, serious injury or death.

- E) Attach the spreader bar onto a lifting equipment with adequate capacity to lift the machine. See Figure 1 on this page.

- F) Select wire ropes and hooks with sufficient capacity and rating to lift the weight involved.

- G) Locate lifting eyes at the front and rear of the machine and attach the hooks to the lifting eyes. See Figures 1, 2 and 3 on this page.

- H) Carefully lift the machine and move to the target location.

⚠ CAUTION

Place wooden blocks or similar protective material between lifting cables and machine to avoid damage at locations where the cables are in contact with the machine.

⚠ CAUTION

Remove and take away the lifting equipment carefully from the machine to prevent them from hitting the machine accidentally.

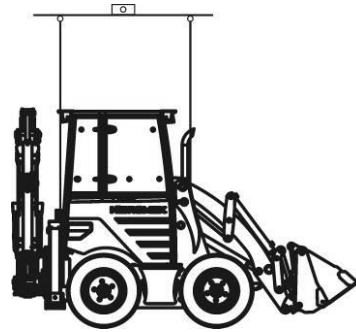


Figure 1

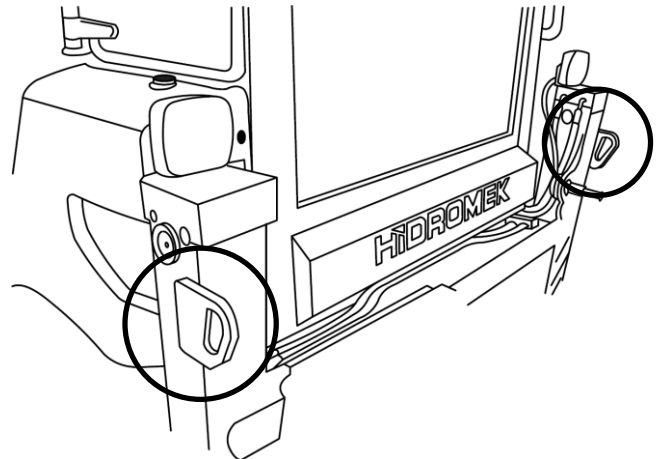


Figure 2

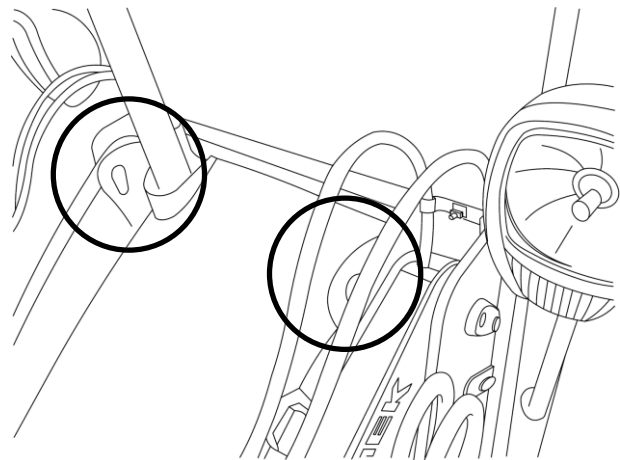


Figure 3

4.20. PRESERVING THE MACHINE FOR STORAGE

If the machine is to be stored without operating for more than two months, the following precautions must be taken to prevent the machine from damage.

1. Park the machine on a flat surface and keep preferably in a closed place.
 2. Thoroughly wash the inside and outside of the machine to clean dirt, oil and greases.
 3. Touch up the paint to repair peeled off paint and scratches to avoid rusting.
 4. Lower the attachments to the ground and close the hydraulic cylinders as full as possible to protect cylinder rods from corrosion. Apply protective coating on the exposed areas of the rods. Commercial products of "OKS 2100/2100" or "Henkel Loctite 7803" or other equivalent product that meets ISO 6743-8:1987 criteria may be used as a protective coating solution on the exposed areas of the components. Follow the instructions in supplier's product manual for application and removal. Also follow the safety rules stated there in.
 5. Inflate the tyres to rated pressure. Where practicable, support the axles from under to take the load off the tyres to avoid damage on the flanks.
 6. Renew all oil with new oil as recommended in this manual. Fill up to max. levels.
 7. Replace all the filters with new ones.
 8. Fill the fuel tank to max. level to avoid condensation.
 9. All control levers must be in neutral position and locked.
 10. Seal all filling caps.
 11. Close and lock all doors and panels.
 12. Seal the exhaust pipe and inlet openings.
 13. Remove the battery, check electrolyte level, and keep in a room at a suitable temperature. Keep the battery charged by charging periodically.
 14. Treat exposed metal parts with anti-rust agent, lubricate machine parts.
 - 15- Apply protective coating to the unpainted parts such as exposed cylinder rods.
 16. Check engine coolant anti-freeze ratio and correct if necessary. Drain coolant if required.
 17. It is advisable to drain engine oil and recirculate with fresh oil if the engine has been run for more than 200 hours.
 18. Attach a "DO NOT OPERATE" sign in the operators cab on the steering wheel.
- For general methods on preservation and removal of preservative materials see ISO 6749.

4.20.1. MAINTENANCE OF THE MACHINE DURING AND AFTER STORAGE

If the machine is to be stored inactive for longer periods of time it will be useful to restart the engine, operate the machine and hydraulic functions once a month.

Following the actions described in the preservation paragraphs, remove protective agents on the machine and its components in order to bring the machine to operational condition.

Allow the engine to idle for at least 15 minutes.

**WARNING**

Do not accelerate the engine after long period of inactivity, otherwise you may cause damage to the bearings and turbocharger.

In the meantime operate the attachment hydraulic cylinders multiple times to allow the hydraulic oil in the system to warm up.

Slowly drive the machine.

If you are not going to operate the machine, then take protective measures and store as described in above paragraphs.

5. MAINTENANCE**5.1. GENERAL INFORMATION****⚠ WARNING**

Read, understand and follow all safety precautions included in this manual before performing any inspection or maintenance procedures on this machine.

The recommendations in Chapter 2 "SAFETY" must be observed. Otherwise serious injury or death as well as material damage could result.



The operator should perform the inspections given hereafter before starting a machine after a prolonged period of inactivity.

It is recommended to repeat inspections after intensive working periods and between working sessions.

The inspections listed here are related to the machine serviceability as well as personal safety. Ask your HIDROMEK Authorized Service to check and correct any defects.

A) HIDROMEK recommends that an inspection and maintenance schedule be developed in accordance with "INSPECTION & MAINTENANCE CHART" of this manual and maintained on a regular basis for this machine. Such a schedule helps keep the machine in optimum operating condition. See "INSPECTION & MAINTENANCE CHART".

B) The information contained in this chapter provides correct procedures for performing Inspection and Maintenance on this machine. Follow these procedures as they are step by step guides for the technician. Also, refer to "INSPECTION & MAINTENANCE CHART".

⚠ WARNING

The time intervals given in the inspection and maintenance charts are for general recommendations. It may be necessary to develop a custom schedule to perform machine maintenance at more frequent intervals depending on the work conditions.

C) Use HIDROMEK replacement parts to keep your machine in ideal operating condition.

⚠ WARNING

It is the responsibility of the machine owner to do periodic maintenance on the machine in a timely manner and in compliance with the maintenance chart provided. Otherwise, our warranty and product liability against any possible damage will be void.

5.2. GENERAL SAFETY**5.2.1. DISPOSAL OF HAZARDOUS WASTE**

Dispose of waste oils, fluids, lubricants, filters and other hazardous waste properly.

**CAUTION**

Dispose of all hazardous waste in accordance with government environmental regulations, laws and codes.

ASBESTOS: Asbestos is a dangerous substance and can cause cancer or lung disease hazard.

DO NOT touch and inhale. Consult safety agencies and pack in a suitable approved bags and mark. Do not blow compressed air. Sprinkle water on the asbestos dust to abate when cleaning.

Do not mix with the other waste. Be careful as plastic bags may act like bellows and spray the asbestos dust when it is dry and not carefully packed.

5.2.2. STOP THE ENGINE AND PARK THE MACHINE

Do not maintain the machine while the engine is running. Always stop the engine and wait until the engine has been cooled down. Park the machine on a flat surface and preferably keep it in a closed place. Release the park brake. Take out the starter key. Activate safety locks.

**5.2.3. KEEP THE MACHINE CLEAN**

Clean the machine thoroughly before performing inspection and maintenance procedures. It is easier and safer to locate problems and to perform maintenance when the machine is clean. The possibility of contamination of the hydraulic system is also reduced.

Do not wash the machine while the engine is running.

5.2.4. HOT SURFACES & FLUIDS

Be cautious and wear proper safety equipment when working around hot areas. Never change oil, engine coolant or filters immediately after the machine has been stopped. Allow machine to cool down before performing maintenance procedures.

**CAUTION:**

Do not wash the hot engine and fuel injection pump with cold water. You may damage it.

5.2.5. WARM UP THE ENGINE OIL

Engine oil must be warmed to at least to 20°C ~ 40°C (68°F ~ 104°F) before oil is changed. If necessary run the engine until oil is warm enough.

5.2.6. ATTACH “DO NOT OPERATE” WARNING

Before starting any inspection or maintenance procedures on the machine, provide and hang a “DO NOT OPERATE” tag in the cabin to warn people not to start the machine. This tag will help prevent accidental starting of the machine.

5.2.7. INSPECT WASTE OILS & FILTERS

All waste oil, fluid and filters should be inspected for debris and foreign material before disposal. This will help the problem areas. Laboratory analysis on a scheduled plan will give clear information on the machine and its components and indication of any possible problems.

5.2.8. PREVENT CONTAMINATION

When a hydraulic component is removed, always cover or plug lines and hoses to prevent hydraulic system from ingress of dirt, dust and debris.

**CAUTION**

Never allow a hydraulic line or component to become contaminated. This could cause severe damage in the system. Obtain proper caps and plugs to be used on this machine.

Cleanliness is of utmost importance for a hydraulic system. Dirty oil will clog the passages and orifices and also cause accelerated wear on the hydraulic equipment such as pumps, valves, cylinders etc. Keep the oil clean and respect oil drain schedules. Replace filter elements per maintenance schedule.

The hydraulic cylinders must be positioned in retracted position as far as practicable and must be kept clean.

5.2.9. SEALS & O-RINGS

Never reuse a seal or O-Ring and always replace with new ones during reassembly of components. Before installing a new seal or O-Ring, coat them with a thin layer of oil to improve sealing ability.

5.2.10. WEAR PROTECTIVE CLOTHING

Wear helmet, safety goggles or face shield, gloves, safety shoes and well fitting overalls when performing inspection and maintenance procedures on the machine.

5.2.11. CLEANING PARTS

Use only approved cleaning solvents and proper equipment to clean parts.

⚠ WARNING

Never use gasoline, diesel fuel or other flammable solvents to clean parts. Always clean parts in a well ventilated area.

5.2.12. RELEASE RESIDUAL HYDRAULIC OIL PRESSURE

Before performing inspection or maintenance procedures, ALWAYS release the residual pressure trapped in the hydraulic system and the hydraulic oil tank by moving hydraulic control levers with the Engine stopped in accordance with the section STOPPING & PARKING THE MACHINE in OPERATION Chapter and by opening the cap of the tank respectively.

⚠ WARNING

Always release the trapped pressure when disassembling hydraulic components such as quick couplers and hose rupture valves.

⚠ WARNING

Never adjust a relief valve settings higher than the value specified by the manufacturer.

⚠ WARNING

Hot gasses may come out from the hydraulic tank. Obey safety rules.

5.2.13. ENGAGE ATTACHMENT SAFETY LOCKS

It will be necessary to raise attachments during maintenance and repair works on certain parts. In such cases, all the attachments must be locked to prevent unexpected movements during maintenance or repair works. See Section "ENGAGING ATTACHMENT SAFETY LOCKS".

5.2.14. HANDLING POLYMERS AND ELASTOMERS CONTAINING FLUORO-CARBON**⚠ WARNING**

Some components such as seals, o-rings, cables and insulations used on the machine parts to withstand high temperatures may contain fluoro-carbon.

These materials are not harmful under normal working conditions. However, when they are subjected to fire, they give-off poisonous smoke and release hydrofluoric acid. The acid is highly corrosive and can not be washed away by simply rinsing with water. Especially when it is in contact with skin, may penetrate under the skin without initial symptom which may require surgery.

Should such a situation exist, wash the affected area for at least 30 minutes with a solution of alkaline detergent and water, and immediately ask for medical assistance.

Avoid subjecting such parts (i.e. seal, o-ring, cable etc.) to fire or extreme temperatures.

DO NOT inhale the vapour if such a situation is encountered. DO NOT touch the area.

Hydrofluoric acid can last for a long time on the machine parts and CAN NOT be washed away by plain water. Wash the affected area with alkaline detergent and then rinse with a solution of detergent and water.

Use heavy gloves if you have to work at that location after such an incident and dispose of the burnt material and gloves you used in a plastic bag in accordance with the rules and regulations in effect in your region.

If you suspect that acid has contacted your skin, immediately wash your skin with a solution of detergent and water. Apply HF Burn Jelly (calcium gluconate gel) around the effected area of skin. At the same time immediately consult a medical authority without delay.

5.2.15. PRECAUTIONS WHEN WORKING WITH A/C REFRIGERANTS

 CAUTION
Any maintenance and repair work on A/C refrigerants must be performed by authorized HIDROMEK service staff ONLY.

The refrigerants used in the A/C system of the machine is R134a. In contrast to R12 Freon gas which is harmful to the ozone layer, R134a has no Negative effect on the ozone layer.

Nevertheless discharging it into atmosphere freely may have negative effects on human health:-If it gets in contact with skin or eye it may cause irritation and frostbite.

If accumulated in confined spaces during maintenance/repair it may cause asphyxia without the victim being aware of it. It may cause increased heart beat, even cardiac arrhythmia, narcotic effect, loss of concentration and dizziness.

-Exposure to fire or under extreme temperatures may give off toxic and corrosive gases which may be harmful to respiratory system.

Pay attention to the following points when working with refrigerants

-Do not discharge the R134a into atmosphere. Instead, recover the existing gases in the system when you have to discharge.

-Use appropriate device when filling, charging extracting and maintaining the system.

-Never mix R134a and R12 in the system

-Wear appropriate clothing, gloves and goggles to avoid contact with the skin and eyes.

-Do not overfill the containers and store safely away from fire.

-Train all personnel on the system and risks involved.

-When in contact with skin and eyes, wash at least 15 minutes with warm water. Do not rub the affected area in case of frostbite.

-Ask for medical assistance in case of any incidence.

5.2.16. PRECAUTIONS TO BE TAKEN DURING WORKING WITH EXHAUST PIPE

When the engine is shut down the exhaust pipe will be extremely hot. Working on the hot exhaust pipes may burn and injure you. When you do assembly/disassembly, maintenance and repair works on exhaust pipes let the engine cool down. As a precaution wear thick gloves.

When you install the exhaust pipe on the engine hood make sure that the exhaust system tailpipe is directed away from the cabin to avoid exhaust fumes coming towards the operator's cabin.

5.2.17. DISPOSAL OF WASTES AND PROTECTION OF THE ENVIRONMENT

Fluids, batteries etc that are to be changed during maintenance and repair works contain harmful agents to health and environment. Observe rules and regulations in effect in your region when you dispose them. Submit them to bodies that are assigned to dispose of or to treat these materials in accordance with legal requirements.

Oils used in the system degrades very slowly in water and contaminates it gravely, therefore pay attention not to discharge freely to a sewerage system or into the environment.

Dispose any tissues and papers, etc that you use to clean oil and grease in suitable plastic bags and dispose as required by local regulations.

Dispose used filter elements after draining them thoroughly and use packaging of the new element for the disposal of the old one. The batteries involve harmful materials for health and the environment. Dispose the used batteries in accordance with regulations regarding disposal of the harmful wastes.

5.2.18. USE OF BIODEGRADABLE SYNTHETIC OILS

Use fluids that are recommended by machine and engine manufacturers. Do not mix different types of oils in the machine. You must use the recommended oils in the engine, transmission and axles. If you prefer to use synthetic oil, you may use it in the hydraulic system only.

Do not mix normal oil with synthetic oil as unsolvable components may be produced due to heat which may clog the filters and the hydraulic components. Before adding new synthetic oil drain the hydraulic system COMPLETELY. Keep in mind that even though you drain the hydraulic tank, there will be a considerable amount of oil remaining in the system (rams, hoses, tubes, filter housing etc.). Make sure that the system is fully drained and then fill with new oil.

5.3. INSPECTION & MAINTENANCE CHART

No	■ adjust	⌘ tighten	◇ lubricate	50 hours	100 hours	200 hours	400 hours	800 hours	1400 hours	2000 hours 1 Year	3000 hours	2 Years
	© check	» clean	□ service									
	● change	ð grease										
1 ENGINE												
1.1	Check Fuel pipes and clamp bands			©								
1.2	Clean air cleaner element				»							
1.3	Drain water from Fuel filters			»								
1.4	Check alternator belt tightness				©							
1.5	Check radiator hoses and clamp bands					©						
1.6	Change engine oil and filter			First Maintenance		● (1)						
1.7	Check intake air line					©						
1.8	Change fuel filter element			First Maintenance		● (2)						
1.9	Drain sediment from fuel tank						»					
1.10	Clean coolant radiator, oil cooler and condenser core surfaces						»					
1.11	Check Fan Belt, replace if necessary						●					
1.12	Change air filter element						● (3)					
1.13	Check engine valve clearance							©				
1.14	Check injection pressure at fuel injection nozzle								©			
1.15	Replace radiator pipes and clamp bands									●		
1.16	Replace fuel pipes and clamp bands									●		
1.17	Change air intake line									●		
1.18	Check turbo charger										©	
1.19	Check injection pump										©	
1.20	Change coolant											●

(1) For more information refer to chapter "5.9.2 Engine Oil Replacement Interval".

(2) Replacement interval may change depending on fuel consumption and fuel quality.

(3) Shorten the inspection/cleaning and replacement intervals if the machine is used particularly in a dusty environment.

No	■ adjust	⌘ tighten	◇ lubricate	8 hours	50 hours	100 hours	200 hours	400 hours	600 hours	1200 hours	2000 Hours 1 Year
	◎ check	» clean	□ service								
	● change	⊖ grease									
2 MAIN PUMP											
2.1	Check oil leakage			◎							
2.2	Check the noise level			◎							
2.3	Check the tightness of the bolts and nuts			◎							
3 TRAVEL MOTOR AND TRAVEL SYSTEM											
3.1	Check oil leakage			◎							
3.2	Check noise level			◎							
3.3	Check the tightness of the bolts and nuts			◎							
3.4	Check and clean the chain housing breather			◎»							
3.5	Check the tightness of the wheel nuts					◎					
3.6	Check oil level of chain housing					◎					
3.7	Change the oil of chain housing										●
4 HYDRAULIC											
4.1	Check the hydraulic oil level			◎							
4.2	Check and clean the hydraulic oil cooler				◎			»			
4.3	Change the pilot line filter			First Maintenance			●				
4.4	Check pressure and function of the main safety relief valve			First Maintenance			◎				
4.5	Check the line pressure for attachment			First Maintenance			◎				
4.6	Test the hydraulic lines functions			First Maintenance			◎				
4.7	Check the pressure of cavitation & check valves			First Maintenance			◎				
4.8	Check the chrome plating and surface condition of cylinder rod			First Maintenance				◎			
4.9	Check the return line filter housing			First Maintenance					»		
4.10	Check, hydraulic oil tank cap, replace if damaged							◎			
4.11	Change return line filter			First Maintenance					●		
4.12	Change hydraulic oil									●	
4.13	Suction strainer, replace if damaged									» ●	
4.14	Hydraulic hoses & assemblies ⁽⁴⁾			●							□

⁽⁴⁾ Hose assemblies will eventually age, harden, wear and deteriorate under thermal cycling and compression set. Periodically inspect, at intervals not exceeding 4 years, all hose assemblies for damage, crack, flattening, blistering and crushing. Replace if any of the above-mentioned is found.

WARNING

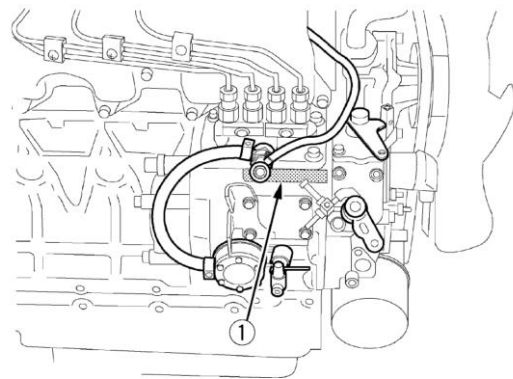
The hydraulic hoses bear extreme pressure. Any minor defect may cause hydraulic oil to eject in streams and cause heavy injury. In such a case, immediately consult your doctor.

No	■ adjust	Ж tighten	◇ lubricate	8 hours	50 hours	100 hours	200 hours	400 hours	2000 hours
	◎ check	» clean	□ service						
	● change	ð grease							
5 BRAKE									
5.1	Check function of parking brake			◎					
6 ELECTRICAL									
6.1	Test function of all lamps			◎					
6.2	Check Battery electrolyte level				◎				
6.3	Check Electric harness Cut, nick, winding				◎				
6.4	Check Battery terminals				◎				
6.5	Check Starter motor			First Maintenance			◎		
6.6	Check Alternator			First Maintenance			◎		
6.7	Check battery, charge if necessary						◎ □		
6.8	Check battery, replace if necessary								●
6.9	Service alternator and starter motor								◎ □
7 CHASSIS & CAB									
7.1	Walk around / visual inspection			◎ »					
7.2	Check and grease pins & bushings			◎ ð					
7.3	Check seat & seat belt			◎					
7.4	Check the fluid level of windscreen washer, Refill if necessary			◎					
7.5	Check painting of the machine			◎					
7.6	Check bolts & nuts of bucket teeth and side cutters			◎ Ж					
7.7	Check front & side panels, tighten if necessary			◎ Ж					
7.8	Condition of backhoe and loader safety locks			◎					
7.9	Hinges of the doors & windows				◎ ◇				
7.10	Check and clean air conditioner filter				◎ »				
7.11	Check the clearance of the telescopic boom polyamide pads				◎ ■				
7.12	Test the clamps function				◎				
7.13	Check door & window grip bars& locks				◎				
7.14	Check stabilizers polyamide pads				◎ ■				
7.15	Check wire rope & controls						◎ ◇		
7.16	Check cab ventilation filters, change if necessary							» ●	

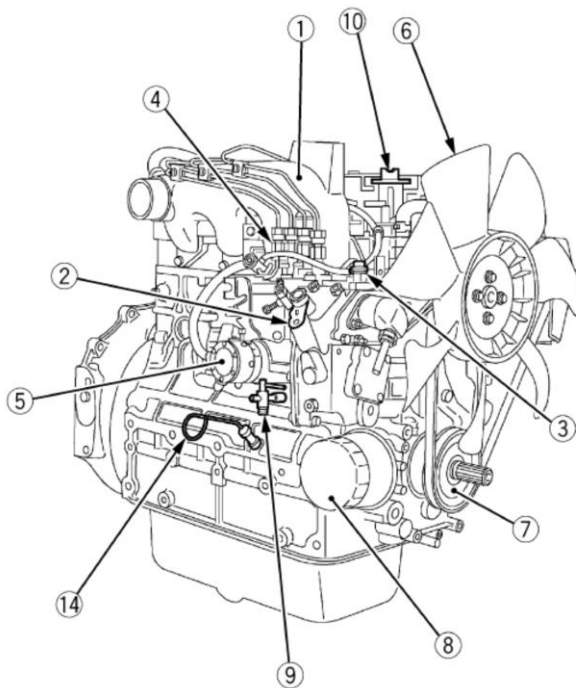
5.4. DESCRIPTION OF PARTS

After reading this manual thoroughly, you will find that you can do some of the regular maintenance yourself. However, when in need of parts or major service, be sure to see HIDROMEK Authorized Service. When in need of parts, be prepared to give your dealer the engine serial number. Locate the serial number now and record them in the space provided.

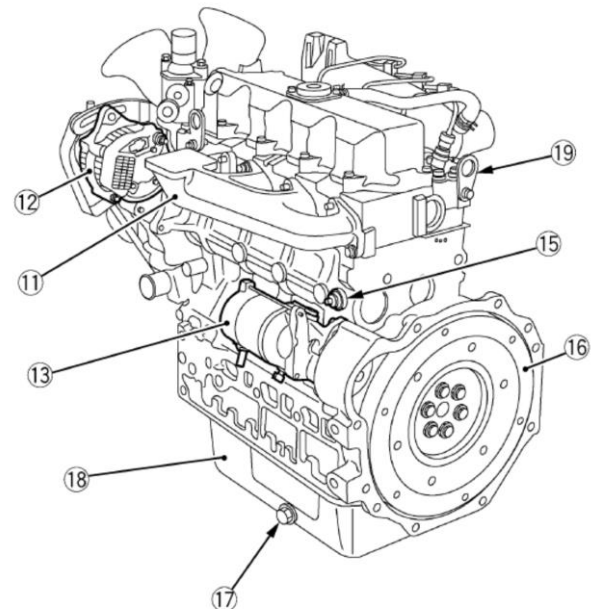
	Type	Serial No
Engine		
Date of Purchase		
Seller		
(Should be filled by customer)		



1- Serial number plate



- (1) Suction manifold
- (2) Speed control lever
- (3) Engine stop lever
- (4) Injection pump
- (5) Fuel feed pump
- (6) Cooling fan
- (7) Fan drive pulley
- (8) Oil filter cartridge
- (9) Water drain cock



- (10) Oil filler plug
- (11) Exhaust manifold
- (12) Alternator
- (13) Starter
- (14) Oil level gauge
- (15) Oil pressure switch
- (16) Flywheel
- (17) Oil drain plug
- (18) Oil pan
- (19) Engine hook

5.5. TABLE of LUBRICANTS & FLUIDS

FMK 6200 MAINTENANCE TABLE

QUANTITY (LITER)	CHANGE INTERVAL	HIDROMEK	PETROL OFISI (LOCAL)	EXXON MOBIL	SHELL	INTERNATIONAL STANDART NO.
ENGINE	9.5	* FIRST 50 HOURS AND THEN AT EVERY ... HOURS	HI-POWER 15W40	TURBO DIZEL EXTRA 15W/40	ESSOLUBE XTS 15W/40 MOBIL DELVAC MX 15W/40	RIMULA 3X 15W/40 *Viscosity API-CC-4/CH-4 CI-4
CHAIN CASE	FILL UP TO PLUG LEVEL	ONCE A YEAR OR 2000 HOURS		TURBO DIZEL EXTRA 15W/40	ESSOLUBE XTS 15W/40 MOBIL DELVAC MX 15W/40	RIMULA 3X 15W/40 *Viscosity API-CC-4/CH-4 CI-4
HYDRAULIC SYSTEM	47**	1200 HOURS	HI-DRAULIC 46	HYDRO OIL HD 46	DTE 25	TELLUS 46 ISO VG 46
COOLANT(WATER WITH ANTIFREEZE)	11.5	EVERY TWO YEARS		SUPER ANTIFIRIZ	ANTIFREEZE ADVANCED	ANTIFREEZE BS 6580/1992
GREASE	SEE 'GREASE SCHEME'			SUPER GRESS EP2	MOBILUX EP2	RETINAX EP2 ALVANIA EP2 N.L.G.I. NO:2 LITHIUM ESASLI

	RECOMMENDED MAXIMUM AIR PRESSURE (PSI)***
FRONT WHEEL: 10X16.5, 10 Tubeless	76
REAR WHEEL: 10X16.5, 10 Tubeless	76

ATTENTION!• FOR CHANGE INTERVAL, SUITABLE VISCOSITY SELECTION AND OTHER ACCEPTED OIL FROM OPERATING&MAINTENANCE MANUAL SEE 'OIL REPLACEMENT INTERVAL TABLE' & 'OIL VISCOSITY GRADE CHART'

** TOTAL SYSTEM REQUIREMENT IS 55.5 L.HYDRAULIC LEVEL INDICATOR SHOULD BE IN THE MIDDLE POSITION AFTER FILLING THE TANK.

*** DETERMINED FOR OFFROAD USE MACHINE SPEED AT 10km/h.

1. DO NOT CLEAN AIR FILTER. CHANGE IT WITH A NEW ONE WHEN WARNING LIGHT IS ON.
2. THE WHEEL NUTS MUST BE CHECKED AND TIGHTENED EVERY TWO HOURS WITHIN THE FIRST TWO WORKING DAYS OF THE MACHINE.
3. SAME ACTION MUST BE TAKEN WHENEVER THE TIRES ARE RE-ASSEMBLED.
4. WHILE TOPPING UP THE OIL, MAKE SURE THAT YOU ARE USING THE SAME OIL AS IN THE SYSTEM.
5. WHILE REPLACING THE OIL, MAKE SURE THAT YOU ARE USING THE SPECIFIED OIL OR EQUIVALENT.
6. SHIFT LOCATIONS OF REAR AND FRONT TIRES TO INCREASE THEIR LIFE.
7. THE WARRANTY DOES NOT COVER DAMAGE AND FAILURE CAUSED BY USER.
8. THE ABOVE VALUES ARE FOR NORMAL CONDITIONS. IF ANY DEGRADING IS OBSERVED, CHANGE OIL IMMEDIATELY.

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CAUTION

Never overfill the oil tank or the crankcase. Respect the recommended filling levels.

Item	Oil Spec.	Ambient Temperature (°C)								
		-30	-20	-10	0	10	20	30	40	50
Engine	API CG4, CH-4 or CI-4									
Hydraulic tank	Hydraulic oil									
Fuel tank	Diesel fuel									
Greasing points	Grease									
Coolant	Antifreeze and water									

ASTM D4985, (antifreeze & water mix ratio depends on the environmental conditions)

5.6. PERIODIC MAINTENANCE

Periodic maintenance Intervals are based on either running hours or time interval. Perform the maintenance whichever occurs first.

MAINTENANCE HINTS

- Daily maintenance is operator's responsibility. It is best to check the machine in the morning before starting the engine and starting to work.

- After a working session, clean the machine, park on a level ground and bring the backhoe in traveling position. Lift the loader arms up and lock them before starting maintenance.

5.7. FIRST 50 HOURS MAINTENANCE

First 50 hours (initial) maintenance should only be carried out by the HIDROMEK authorized service personnel. (for brand new machines)

Initially perform the first 50 hours maintenance. Afterwards, do the following checks and maintenances.

Check and adjust if necessary, with the engine stopped:

- Engine air intake system connections
- Engine exhaust system connections
- Tightness of all mounting nuts
- Parking brake settings
- Cleanliness of Hydraulic oil return filter housing
- Starter motor
- Alternator

Check and adjust if necessary, with engine running:

- Engine idle speed
- Fuel injection pump settings
- Engine speed at full throttle
- Fuel system leakages and contamination
- Hydraulic line pressure and leakage
- Pressure of cavitation and check valves
- Main safety relief valve pressure and function

Change:

- Engine oil and engine oil filter
- Hydraulic oil return filter element
- Hydraulic pilot line filter
- Change fuel filter

Only use lubricants that are recommended by HIDROMEK. See TABLE of LUBRICANTS & FLUIDS.

5.8. PRE-START (EVERY 8 HOURS) INSPECTION & MAINTENANCE

Perform following procedures every 8 hours of operation or daily, before starting the machine.

5.8.1. CHECKING ENGINE OIL LEVEL**STOP DANGER**

Be sure to stop the engine before checking and changing the engine oil and the oil filter cartridge. Do not touch muffler or exhaust pipes while they are hot; Severe burns could result. Always stop the engine and allow it to cool before conducting inspections, maintenance, or for a cleaning procedure.

Contact with engine oil can damage your skin. Put on gloves when using engine oil. If you come in contact with engine oil, wash it off immediately.

! WARNING

Certain maintenance-repair operations require that the attachments (e.g.; loader arm) be raised and held in this position. Always engage the loader lift cylinder lock in such cases. Serious injury or death may result from neglecting to lock the loader arm in lifted position as the loader arm may drop suddenly.

A) Check engine oil level before starting the engine or 5 minutes after stopping the engine. Park the machine on a flat and hard ground. Apply parking brake. Stop the engine.

B) Open side cover.

C) Locate and pull the engine oil dipstick. Wipe dipstick using a clean, dry, lint free cloth and reinsert it to the engine. Pull it again and visually inspect the engine oil level on the dipstick. Correct oil level is marked as (A) in the figure.

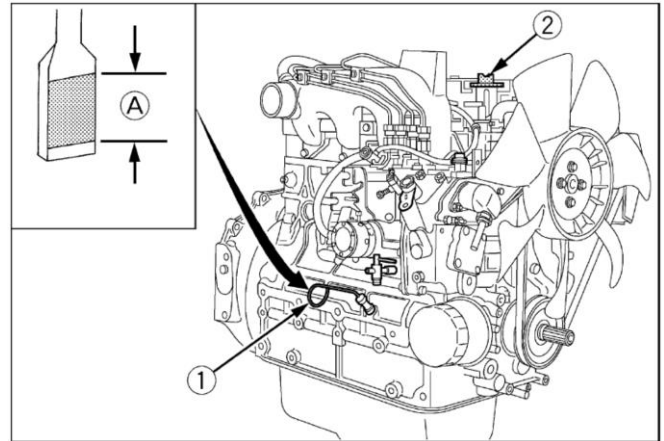
D) If it is necessary to add oil, open the oil filling cap and add adequate amount of oil.

See "TABLE Of LUBRICANTS & FLUIDS" to learn oil specifications and amount. Only use recommended oils.

STOP DANGER

Be cautious of hot fluids and surfaces. Wear goggles, safety shoes, helmet, working clothes and gloves to perform inspection and maintenance on this machine.

After adding the oil, check oil level and make sure the filler cap and dipstick are placed correctly. Close side cover panel and remove cylinder lock strut as described in DISENGAGING CYLINDER LOCK STRUT article of OPERATION chapter.



- (1) Oil filler plug [Lower end of oil level gauge]
 (2) Oil level gauge (A) Engine oil level within this range is proper.

! CAUTION

Engine oil should be MIL-L-2104C or have properties of API classification CF or higher. Change the type of engine oil according to the ambient temperature.

Above 25 °C (77 °F)	SAE30 SAE10W-30 SAE15W-40
0 °C to 25 °C (32 °F to 77 °F)	SAE20 SAE10W-30 SAE15W-40
Below 0 °C (32 °F)	SAE10W SAE10W-30 SAE15W-40

When using oil of different brands from the previous one, be sure to drain all the previous oil before adding the new engine oil.

5.8.2. CHECKING FUEL LEVEL

Keep the fuel tank full after finishing daily work to avoid fuel condensation in the tank.

! WARNING

Place the loader arm on the ground and switch off the engine prior to re-fuelling the machine. Never move controls of the machine while refueling the machine.

- 1) Turn the starter switch to "I" (ON) position.



Fuel level gauge

- 2) Observe the fuel level gauge on the right hand side instrument panel carefully. See figure.

! WARNING

Diesel fuel is inflammable. Never allow fire in the vicinity of the machine. Smoking is forbidden while servicing the engine or adding fuel to the fuel tank. Never add fuel while the engine is running. Failure to comply may cause fires and injuries.

- 3) To fill the fuel tank, open fuel filling cap with the key provided and fill up the fuel tank with diesel fuel as recommended.

- 4) Tighten the fuel filling cap after refueling and lock it. Check the fuel filter sediment bowl on the engine. drain water and sediment if there is any, by loosening the screw.

! CAUTION

Drain water accumulated in the fuel filter/water separator every day. Water in the fuel system will cause damage on the fuel injection pump and the injectors, and reduce engine performance.

! WARNING

Use clean, settled & good quality fuel. If you have to use non-standard fuels, consult your HIDROMEK Service Dealer on oil change intervals.

Gasoline must not be used in refueling. Do not add gasoline to diesel fuel since it will cause explosive gases in the fuel tank.

To provide the full power and performance of your engine, use good quality diesel fuel.

DIESEL FUEL

For full power and performance of your engine use qualified diesel engine.

Recommended diesel fuel properties are given below:

Flash point	Water and Sediment, volume %	Carbon residue on, 10 percent Residuum, %	Ash weight %
Min	Max.	Max.	Max.
52 (125)	0,05	0,35	0,01

Distillation Temperatures, °C (°F) 90% Point		Viscosity Kinematic cSt or mm²/s at 40°C		Viscosity Saybolt, SUS at 37.8 °C(100 °F)	
Min	Max	Min	Max	Min	Max
282 (540)	338 (640)	1,9	4,1	32,6	40,1

Sulfur, weight %	Copper Strip Corrosion	Cetane Number
Max	Max	Min
0.50	No. 3	40

Fuel is flammable and dangerous. You should handle fuel with care.

STOP DANGER

Do not mix gasoline or alcohol with diesel fuel. This mixture can cause an explosion.

Be careful not to spill fuel during refueling. If fuel should spill, wipe it off at once, or it may cause a fire. Do not fail to stop the engine before refueling. Keep the engine away from the fire.

Be sure to stop the engine while refueling or bleeding and when cleaning or changing fuel filter or fuel pipes.

Do not smoke when working around the battery or when refueling.

Check the fuel systems at a well ventilated and wide place.

When fuel and lubricant are spilled, refuel after letting the engine cool off.

Always keep spilled fuel and lubricant away from engine.

Cetane Rating : The minimum recommended Fuel Cetane Rating is 45. A cetane rating greater than 50 is preferred, especially for ambient temperatures below -20 (-4) or elevations above 1500 m (5000 ft).

Diesel Fuel Specification Type and Sulfur Content % (ppm) used, must be compliant with all applicable emission regulations for the area in which the engine is operated.

Use of diesel fuel with sulfur content less than 0.10 %(1000 ppm) is strongly recommended.

If high-sulfur fuel (sulfur content 0.50 % (5000 ppm) to 1.0 % (10000 ppm)) is used as a diesel fuel, change the engine oil and oil filter at shorter intervals. (approximately half).

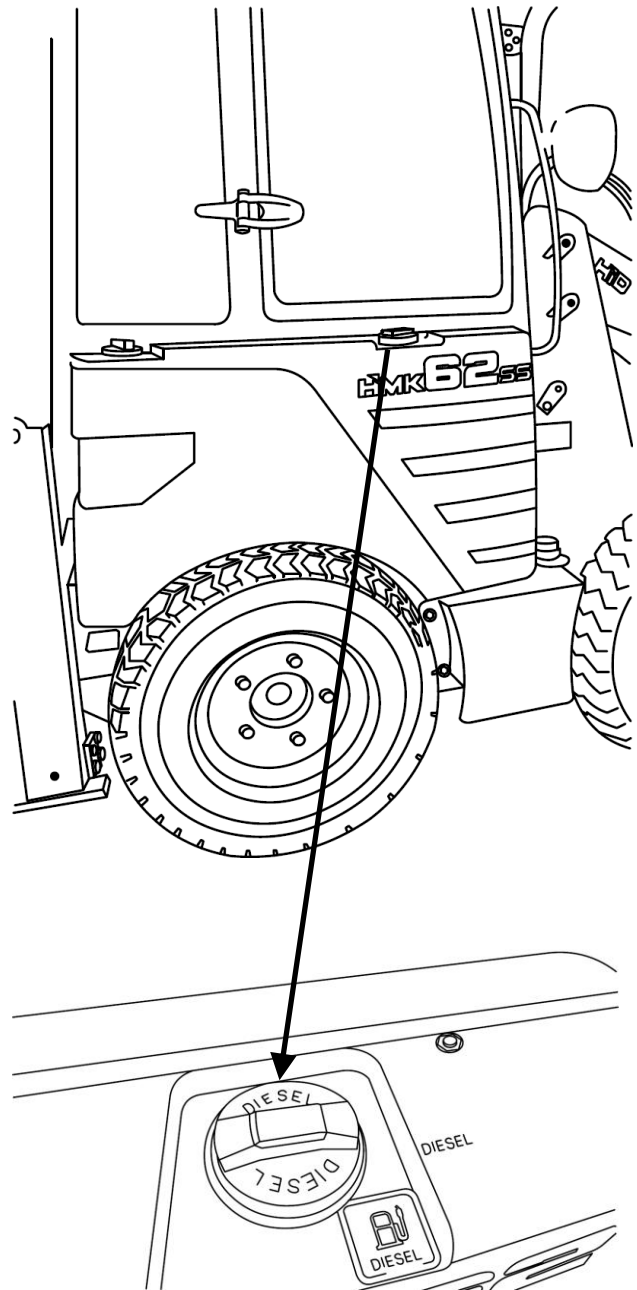
DO NOT USE Fuels that have sulfur content greater than 1.0 % (10000 ppm).

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

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

Since KUBOTA diesel engines of less than 56 kW (75 hp) utilize EPA Tier 4 and Interim Tier 4 standards, the use of low sulfur fuel or ultra low sulfur fuel is mandatory for these engines, when operated in US EPA regulated areas. Therefore, please use No.2-D S500 or S15 diesel fuel as an alternative to No.2-D, and use No.1-D S500 or S15 diesel fuel as an alternative to No.1-D for ambient temperatures below -10 (14) .

- 1) SAE : Society of Automotive Engineers
- 2) EN : European Norm
- 3) ASTM : American Society of Testing and Materials
- 4) US EPA : United States Environmental Protection Agency
- 5) No.1-D or No.2-D, S500 : Low Sulfur Diesel (LSD) less than 500 ppm or 0.05 wt. %
No.1-D or No.2-D, S15 : Ultra Low Sulfur Diesel (ULSD) 15 ppm or 0.0015 wt. %



5.8.3. CHECKING HYDRAULIC OIL LEVEL

Hydraulic oil level is checked by hydraulic oil level gauge on the hydraulic oil tank on the right hand side of the machine.

Hydraulic oil level checking procedure is given below:

A) Park the machine on a hard and flat ground. Lock the parking brake.

Control the loader attachment: Lower the loader bucket on the ground.

Control the backhoe attachment: Lift the boom up, move the arm and the bucket in.

Machine will come to Hydraulic Oil Level Checking Position as shown in figure.



B) Stop the engine. Take the starter key.

C) Check the hydraulic oil level by looking through the sight glass on the hydraulic tank oil level indicator. Proper oil level should be in the middle of the sight glass of the gauge or between the mid-point and the top.

CAUTION

When water or air exists in the system, the hydraulic oil in the sight glass does not appear clear. Do not continue the operation of the machine because severe damage to the hydraulic pump as well as other hydraulic components can occur.

D) If necessary, add hydraulic oil of recommended brand and type to the tank after removing its cap and refer to the "TABLE of LUBRICANTS & FLUIDS".

5.8.4. HYDRAULIC OIL TANK CAP

Hydraulic tank cap is of pressurized type and keeps the tank pressure at 0,3 bars. Air under pressure should be released when the tank cap is loosened to indicate that it is functioning properly.

WARNING

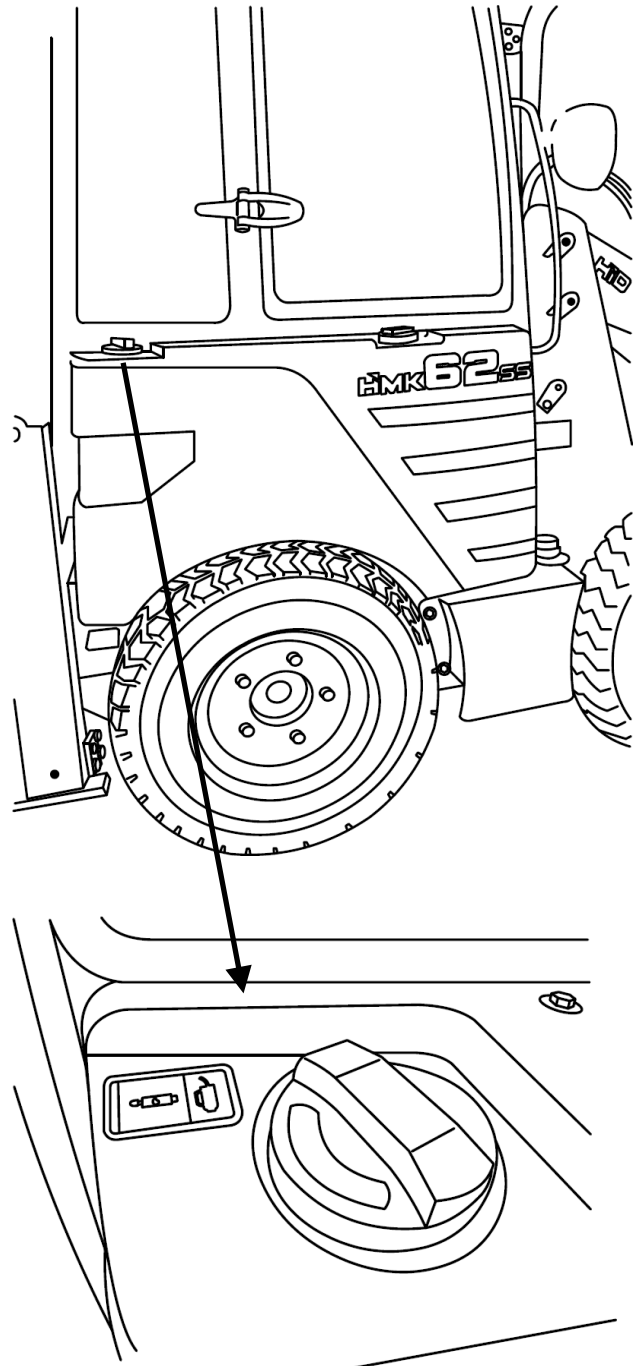
If the cap can not keep the pressure in the Hydraulic Oil Tank, replace the cap.

CAUTION

Do not remove the strainer under the cap when adding hydraulic oil into tank. This is important for the cleanliness of the tank.

WARNING

Hydraulic oil contains chemical agents. Consult doctor if you swallow or if it gets into your eyes. Wash your hands with hot water and soap after contact with oil. Do not use diesel fuel or similar chemicals to clean your hands.



5.8.5. CHECKING ENGINE FLUID LEAKS

- 1) Inspect complete Engine for signs of fluid leaks.
- 2) When inspecting around pressure lines and hoses use a stiff piece of cardboard as shown in the Figure.

CAUTION

Do not use your hands to pinpoint areas of fluid leakages. Tiny fluid leakages under high pressure may penetrate into your skin and injure you heavily. Ask for medical help in such cases. Use a piece of cardboard to detect if there is a leakage.

**5.8.6. CHECKING THE TYRE PRESSURE**

WARNING

The task of inflating or servicing tyres can be extremely dangerous and should be performed by trained personnel whenever possible, using correct tools, proper procedures and safety equipment. An exploding tyre can kill. Inflated tyre may explode due to overheating. Do not place your fingers on the tyre bead or rim during inflation; serious injury or amputation could result. Stand clear of potential trajectory danger zone.

Correct tyre pressure should be maintained for all tyres to enhance operating stability and extend tyre life. Both under-inflation and over-inflation should ALWAYS be avoided. Incorrect inflation is the common cause of most tyre problems and failures. When installing tyres BE SURE they are of same size and pattern as the original tyres of the backhoe loader.

Tyre inflation procedure is given below for adding air to a tyre that has some amount of air pressure in. Should the tyre become flat completely find a tyre repair mechanic :

A) Make sure that the tyre is correctly fitted to its place on the machine or put it in a safety cage as seen in the figure.

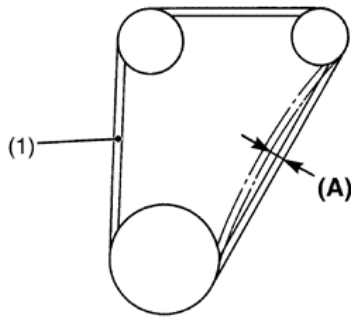
B) Air supply system that has an adjustable pressure regulator should be used. The pressure regulator should be adjusted no higher than 10 PSI (0,7 bar) above the recommended inflation pressure. See "TABLE of TYRE SIZES and INFLATION PRESSURES" given below for the inflation pressure of your tyres. An extension hose having clip-on chuck and in – line remote blocking valve should be used.

C) Pay extra attention to the correct fitting of the air hose on the valve of the tyre. Keep others away from the place where the tyre is inflated. Stand clear of the trajectory danger zone during inflation.

Tyre size	Inflation (psi)
10x16.5 10PR	76

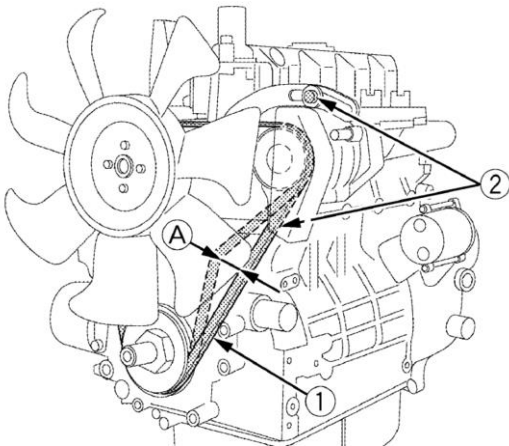
5.8.7. CHECKING THE DRIVE BELT TENSION

Park the machine on a firm and level ground.
Engage the parking brake and put the drive control lever to neutral position.
Raise the loader arm and apply the safety strut.
Lower the backhoe to the ground and stop the engine.
Remove the ignition key.
Lock the loader control levers.



WARNING

Make sure that the engine can not be started accidentally. Hang a "DO NOT OPERATE" warning sign on the operator's controls console. Disconnect the battery cable before doing this maintenance job.



Press down the belt with the thumb at the center of the longest free length and check the deflection. With moderate thumb pressure (10kgf) the correct deflection of the belt is 7 - 9 mm.

If twin belts are fitted, **both belt should have the same tightness. check and adjust the tension on the tighter belt.**

Replace the belt if it is worn or damaged. If twin belts are fitted, they must be replaced together.

5.8.8. CHECKING COOLANT LEVEL

Check the coolant level before starting the engine.

STOP DANGER

Do not stop the engine suddenly, stop it after about 5 minutes of unloaded idling.

Work only after letting the engine and radiator cool off completely (more than 30 minutes after it has been stopped).

Do not remove the radiator cap while coolant is hot. When cool to the touch, rotate cap to the first stop to allow excess pressure to escape. Then remove cap completely. If overheats should occur, steam may gush out from the radiator or recovery tank; Severe burns could result.

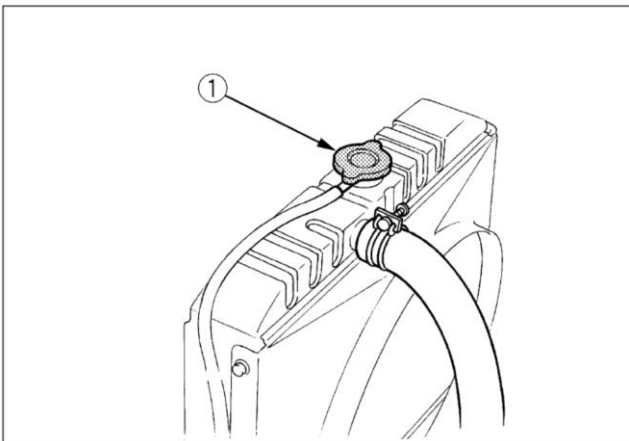
A) Park the machine on hard and flat ground. Apply the parking brake.

B) Lift the loader arm up and install the safety lock strut. Stop the engine.

CAUTION

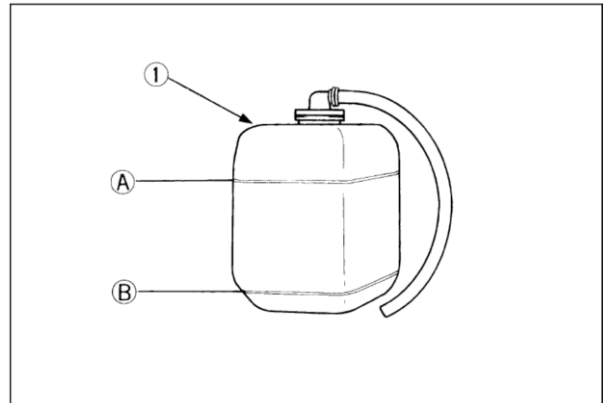
Always let the engine cool down before checking the coolant level. Boiling hot water may overflow and cause serious injury.

C) Remove the radiator cap, after the engine has completely cooled, and check to see that coolant reaches the supply port.



(1) Radiator cap

Or check the coolant level of the recovery tank. When it is between the "FULL" and "LOW" marks.

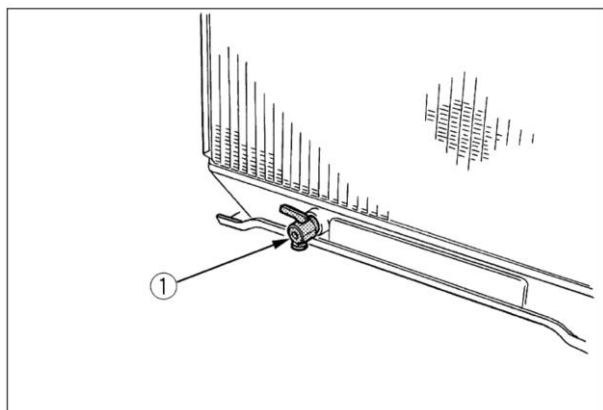
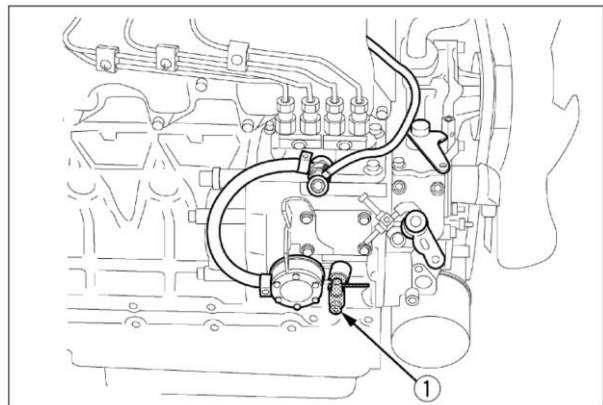


(1) Recovery tank

(A) "MAX."
(B) "MIN."

D) When the coolant level drops due to evaporation, add water only up to the full level.

Check to see that two drain cocks; one is at the crankcase side and the other is at the lower part of the radiator as figures below.



(1) Coolant drain cock

E) After adding coolant re-install the coolant filling cap and close the engine hood.

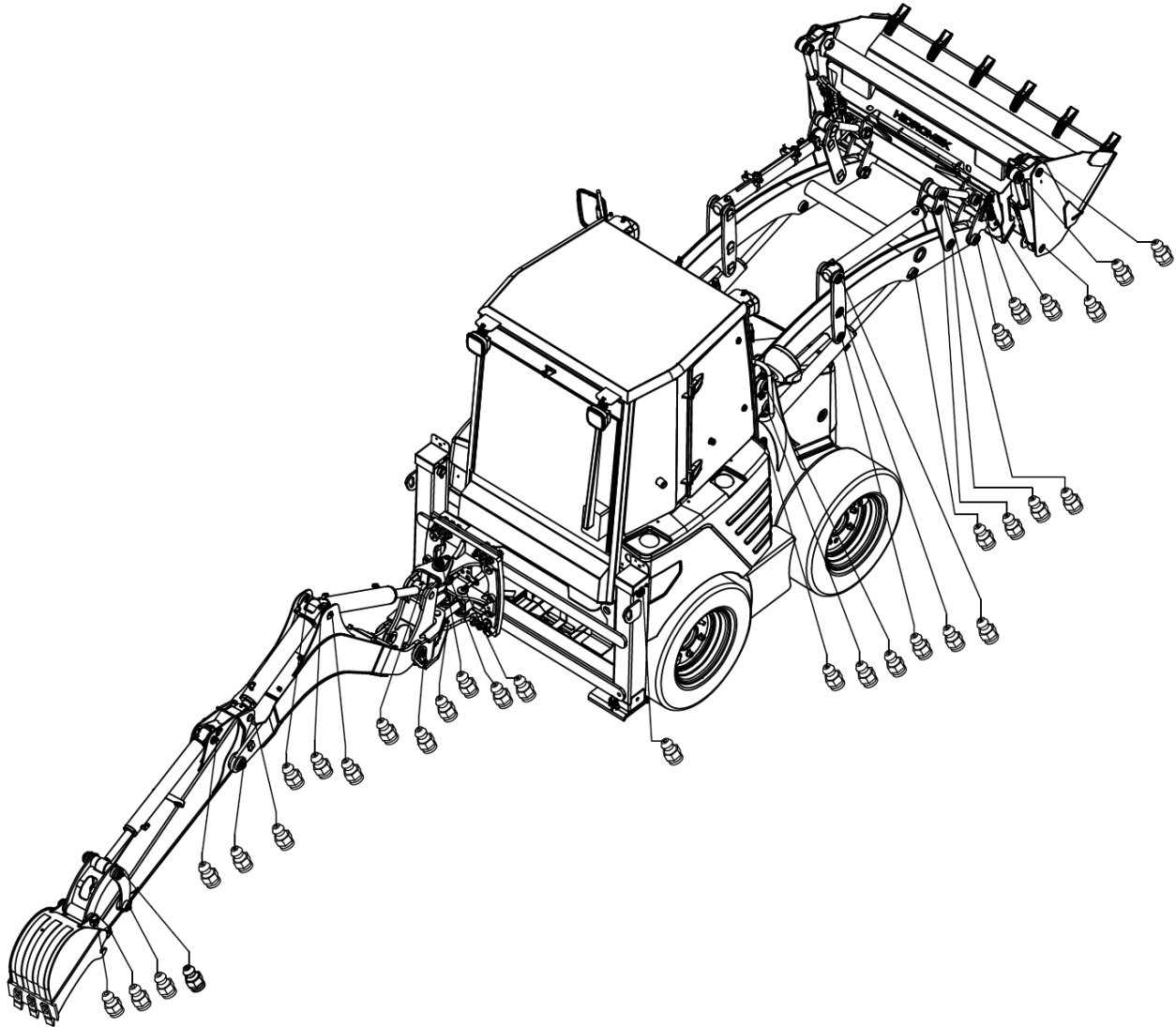
5.8.9. GREASING

See "TABLE OF LUBRICANTS & FLUIDS" for recommended greases. Grease all points until clean grease overflows from the bearings.



DANGER

Before greasing, park the machine on a hard and flat surface. Lock the parking brake and put the drive control lever to neutral position. Take the machine given position in the next page and stop the engine. Take the starter key with you and lock the cabin doors. Hang a "DO NOT OPERATE" tag on the operator's controls console. Turn the battery disconnect switch to "OFF" position before greasing. Failure to do this could result in serious injury or death.



5.9. WEEKLY (EVERY 50 HOURS) INSPECTION & MAINTENANCE

Weekly (50 hours) inspection & maintenance procedures must be performed in addition to daily (8 hours) inspection & maintenance procedures.

5.9.1. CHECKING THE FUEL PIPES



DANGER

Check or replace the fuel pipes after stopping the engine. Broken fuel pipes can cause fires.

Check the fuel pipes every 50 hours of operation.

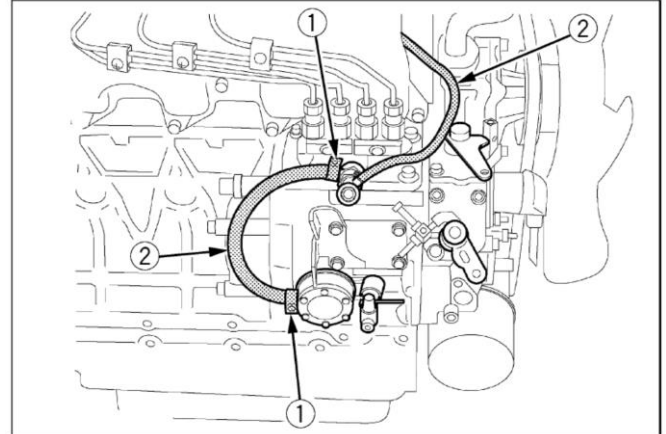
When if;

1. If the clamp band is loose, apply oil to the screw of the band, and tighten the band securely.
2. If the fuel pipes, made of rubber, become worn out, replace them and clamp bands every 2 years.
3. If the fuel pipes and clamp bands are found worn or damaged before 2 years' pass, replace or repair them at once.
4. After replacement of the pipes and bands, air-bleed the fuel system.



CAUTION

When the fuel pipes are not installed, plug them at both ends with clean cloth or paper to prevent dirt from entering. Dirt in the pipes can cause fuel injection pump malfunction.



- (1) Clamp band
(2) Fuel pipe

5.9.2. DRAINING THE FUEL TANK

A) Park the machine on a hard and flat surface. Lock the parking brake. Stop the engine and take the starter key.

B) Locate and remove the drain plug at the bottom of the fuel tank. See figure.

WARNING

Diesel fuel is inflammable. Never allow fire/flame in the vicinity of the machine. Smoking is forbidden while servicing the engine or adding fuel to the fuel tank. Never replenish fuel while the engine is running. Fire and/or fatal injury can result.

C) Allow all water and sediment to drain from fuel tank into a waste container.

D) Re-install the drain plug with its seal and tighten.

5.9.3. DRAINING WATER FROM FUEL FILTER AND FUEL PRE-FILTER

A) Park the machine on a hard and flat place. Lock the parking.

B) Lift the loader arm and install the safety lock strut. Stop the engine and take the starter key.

C) Use the starter key and open the engine hood. Open the right hand side cover panel.

D) Locate the fuel filter and fuel pre-filter. Check for water in the bowl.

CAUTION

Clean up all spilled fuel to avoid fire and keep flame/fire away from spilled fuel.

E) Place a tray under the filter to catch spill of fuel .

F) Loosen the drain plug (3) at the bottom of the filter to drain it if there is any water. See figures.

G) Allow all water and sediment to drain from filter into the tray.

H) Tighten filter drain plug.

NOTE

If the fuel pre-filter is very dirty dismantle and clean it according to instructions given in "Replacing Fuel Pre-Filter Element".

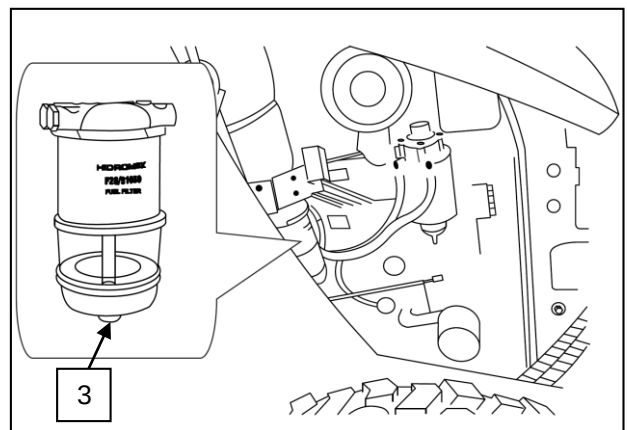


Figure - Fuel Pre-filter

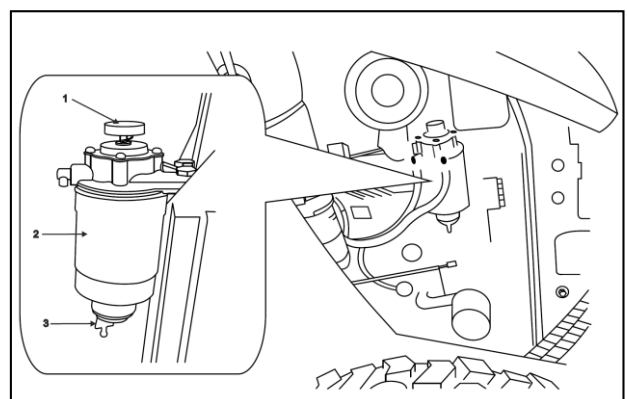


Figure – Fuel filter

5.9.4. CHECKING THE CLEARANCE OF INNER PLATES OF THE STABILIZERS

5.9.4.1 FRICTION PADS

Friction pads serve as a bearing and eliminate play between inner and outer sections of the stabilizer. This helps outer legs to slide squarely on the inner legs when extracted.

5.9.4.2 TOP FRICTION PADS

Top friction pads are located on the upper part of the inner legs. They consist of 4 pieces and are not adjustable.

5.9.4.3 BOTTOM FRICTION PADS

Bottom friction pads are in the lower part of the outer legs. Two of them are stationary and two of them are adjustable. Internal sections must be removed to replace the friction pads.

Forces generated by operation of the stabilizers is mainly carried and transferred by the bottom friction pads so they are subjected to accelerated wear consequently. Therefore, wear on the bottom friction pads must be checked periodically.

Top and Bottom Friction pads must be replaced as a complete set.

A) Place the machine on a flat ground. Lock the parking brake. Put the drive control lever into neutral. Place the attachments on the ground. Stop the engine and take the starter key away.

B) Lifting the stabilizers 5 cm above the ground is sufficient for checking the clearance between external and internal sections.

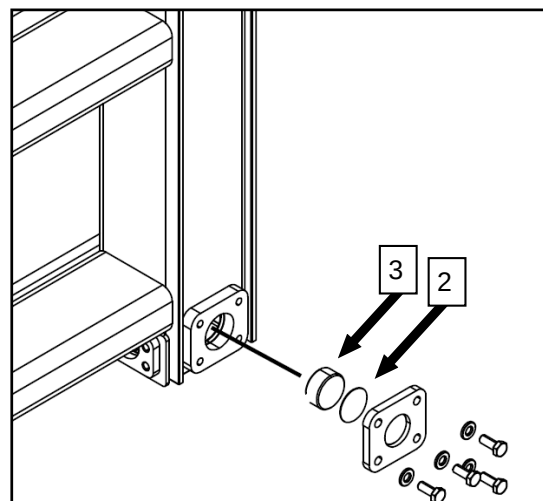
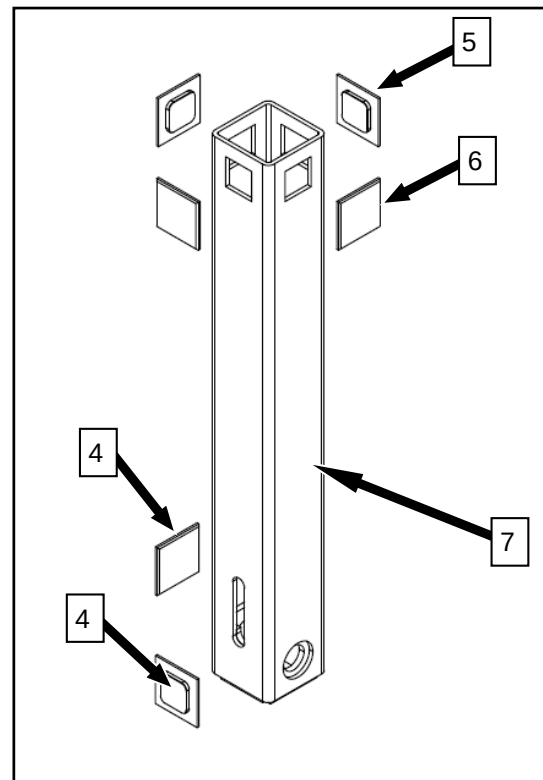
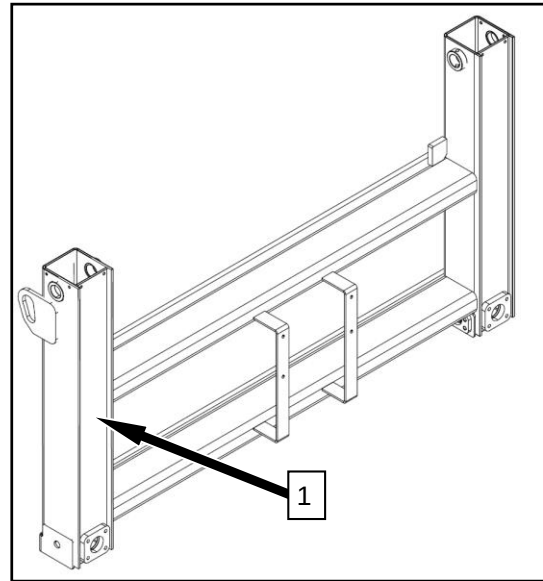
C) Loosen the friction plates and move them just to touch the internal section.

D) Then, fit shims to obtain a clearance of 1-1,5 mm.

If clearance is too short, the service life of the plates will decrease.

- 1) Outer section
- 2) Fixed friction plates
- 3) Adjustable friction plates
- 4) Shims
- 5) Fixed top friction plates
- 6) Fixed top friction plates
- 7) Inner section

(Bottom friction plates 2 and 3 are used as a set).



5.9.5. CHECKING THE ROPS/FOPS OPERATOR'S CABIN

This machine is equipped with roll over protective structure (ROPS) and falling objects protective structure (FOPS).

WARNING

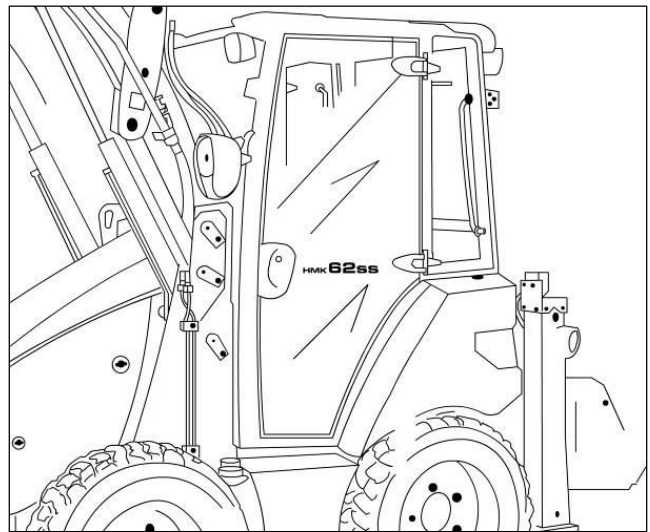
Operating the machine without or with a damaged ROPS/FOPS may cause death or severe personal injury.

Never use the machine whose ROPS / FOPS is damaged due to an accident until the operator's cabin is replaced with a new one.

WARNING

Do not try to repair or make structural alterations on the operator's cabin without the approval of the manufacturer. Otherwise, the ROPS / FOPS certification will expire and your safety can not be assured.

Perform visual inspection on ROPS / FOPS for any deficiency. Check for missing and loose fasteners. Check the tightness of bolts and tighten to proper torque levels, if needed. Contact HIDROMEK Authorized Services for further support. The operator may be killed or injured severely if above given precautions are not taken.



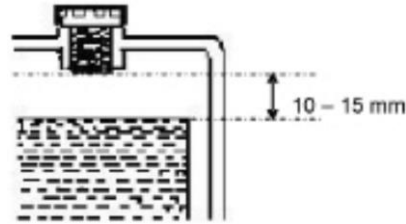
ROPS operator's cab

5.9.6. CHECKING THE ELECTROLYTE LEVEL OF THE BATTERY

Check the electrolyte level of the battery of a new machine after the first 50 hours of operation. Then, check the electrolyte level of battery according to "INSPECTION and MAINTENANCE CHART".

⚠ WARNING

- Wear helmet, approved safety glasses or face shield, gloves and other safety equipment when working with batteries.
- Work in a well ventilated area.
- Battery electrolyte (acid) is corrosive. If it comes in contact with skin, eyes or clothing, flush with large amounts of clean water and seek immediate medical help.
- Battery electrolyte (acid) produces hydrogen gas that is highly explosive; do not allow sparks, fire or flames to come near and do not smoke when checking the electrolyte level.



A) Place the machine on flat ground. Apply the parking brake. Put the drive control lever into neutral.

B) Open battery access cover in front of the hood. See figure.

C) Remove battery cell caps and visually inspect the electrolyte (acid) level. Proper level is 10 ~ 15 mm (0,4" ~ 0,6") above cell plates. See figure

D) If necessary, add each cell to proper level with distilled water only.

Remove cables from poles and clean with hot water. Coat each pole with a thin layer of petroleum jelly. Clean cables in similar way and reinstall onto the battery.

If cables are found to be in poor condition, replace with new ones immediately.

5.10. EVERY 100 HOURS INSPECTION & MAINTENANCE

Perform every 8, 50 operating hours inspection and maintenance procedures along with the following 100 operating hours inspection and maintenance procedures.

5.10.1. CHECKING CHAIN HOUSING OIL LEVEL

Oil filling plug of chain housing is shown in the figure. It is the same as on the other side.

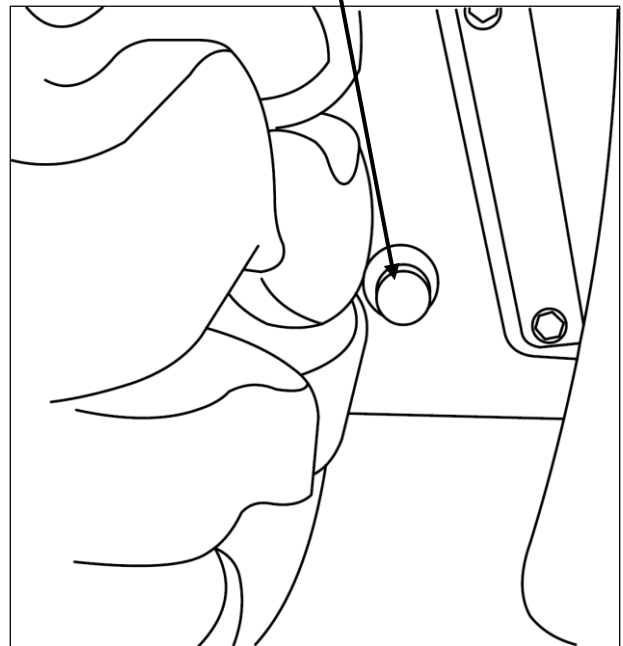
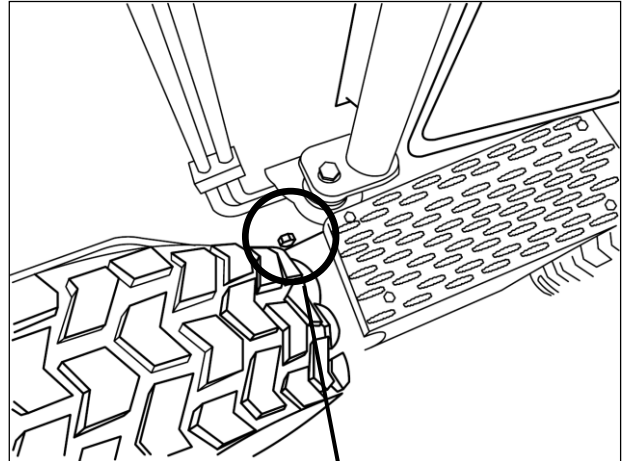
Follow the procedure below to check the oil level in the chain housing ;

Park the machine on a level and hard ground. Stop the engine. Apply the parking brake. Remove the starter key and leave the machine.

Remove the plug with a spanner.

Check the oil level. If you can not see the oil level or you can not feel with your finger, pour some new clean oil from the plug into the housing. Excessive oil will drain and level will be set.

Use proper kind and amount of oil as told in this manual. Be sure that the oil is the same as in the housing.



5.11. EVERY 200 HOURS INSPECTION & MAINTENANCE

Perform every 8, 50, 100 operating hours inspection and maintenance procedures along with the following 200 operating hours inspection and maintenance procedures.

5.11.1. CHANGING ENGINE OIL

Change the Engine Oil and Filter of a new machine after the first 50 hours of operation. Then, change the Engine Oil and Filter according to "INSPECTION and MAINTENANCE CHART".

See "OIL CHANGE INTERVAL TABLE" to determine the Oil changing interval according your operating conditions.

See "OIL VISCOSITY GRADE CHART" to determine the Oil Grade according to your operating conditions.

A) Park the machine on a hard and flat surface. Lock the parking brake.

B) Lift the loader arm up and install the safety lock strut.

C) Allow the engine to run until the oil is warm enough if it is cold.

D) Stop the engine to prepare for draining the oil.

WARNING

Do not change the oil immediately after you stop the engine. The oil will be extremely hot. Allow until the engine oil cools down sufficiently.

WARNING

As the filter bowl will be empty after the oil is replaced, starting the engine may cause crankshaft bearing damage due to lack of pressure in oil galleries. To prevent it, crank the engine with the starter with the fuel CUT OFF. Do not crank more than 20 seconds.

E) Place a suitable container under the engine oil sump.

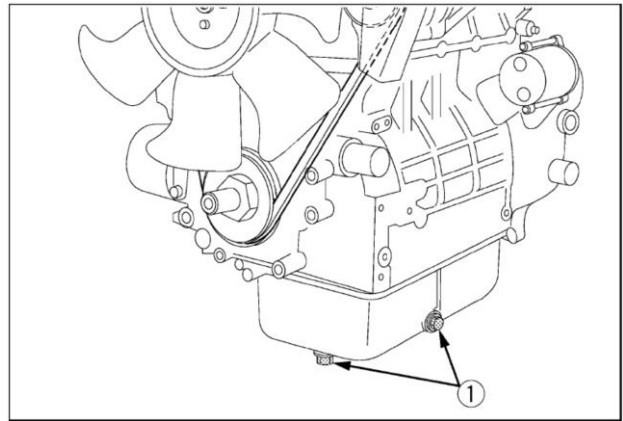
F) Open side cover panel.

G) Locate and remove the oil sump drain plug and its o-ring and drain the lubricating oil from the engine sump. See figure . Ensure that the o-ring is not damaged.

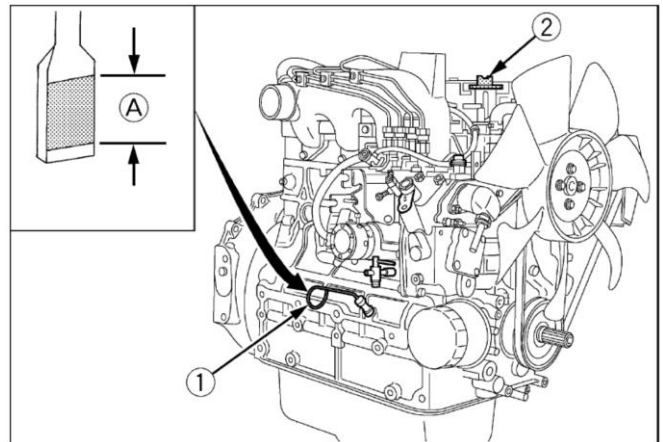
H) Fit the drain plug and its o ring and tighten the plug to 34 Nm (25 lbf ft, 3,5 kgf m) after the engine oil has drained.

I) Remove oil filler cap and refill the engine with new and clean engine oil of recommended quality up to the level of "UPPER" notch on the dipstick. See figure on the previous page and refer to the "TABLE of LUBRICANTS & FLUIDS".

After refilling oil, wait for 5 minutes and check oil level again, re-install oil filler cap, re-install the dipstick and close side cover panel.



(1) Oil drain plug



(1) Oil level gauge

(2) Oil filler plug

[Lower end of oil level gauge]

(A) Engine oil level within this range is proper.

5.11.2. OIL CHANGE INTERVALS

Oil change intervals given below are based on normal working conditions. Under heavy conditions and dusty environment, it may be necessary to shorten oil change and maintenance intervals. Obtain lab analysis report of fuel used and perform maintenance more frequently in such cases if needed.

Sulphur content of the fuel will influence engine lube oil life. In countries where high sulphur content fuel is used, change period of the engine oil and engine oil filter element will be shortened due to increased soot content.



CAUTION

Maintenance intervals are only applicable if the fuel and lubricants are as specified in this manual. Depending on the sulphur content of the fuel used, change the oil in your engine according to the table given below.

ADDITIVES

Oils recommended by Hidromek include additives required to obtain optimal performance from the oil. Hidromek does not recommend adding any kind of additives to increase the performance of the engine or the fuel.

Additives can spoil oil and fuel properties therefore accidents and failures on use of additives are out of warranty.

5.11.3. OIL VISCOSITY GRADE

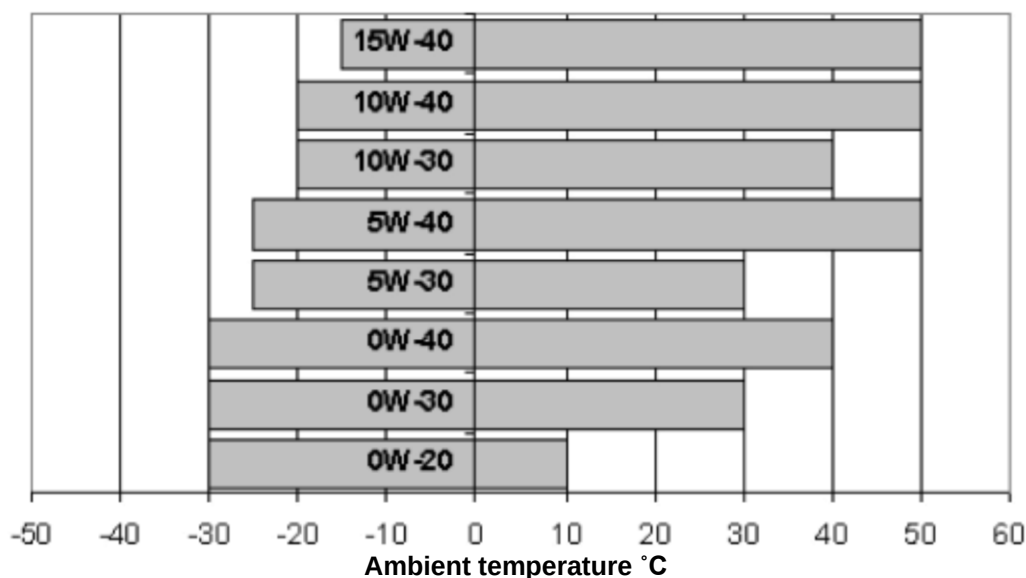
Recommended oil viscosity grades for particular climates are given below in OIL VISCOSITY GRADE CHART. Select the most proper grade in the chart for your climate.

ALWAYS ensure that the correct viscosity grade of engine lubricating oil is used for the ambient temperature range in which the engine will run.

Sulfur	Oil change interval (operating hours)
Below %0,2 (2.000 ppm)	200
Between %0,2 - %0,5	150
Between %0,5 - %1,0 (5.000 – 10.000 ppm)	100

Using diesel fuel with sulfur level below 2.000 ppm is strongly recommended. Sulfur level above 2.000 ppm will decrease the oil change interval as shown in the table. NEVER use high sulfur fuel with sulfur level above 10.000 ppm.

Viscosity grade



5.11.4. CHANGING ENGINE OIL FILTER**DANGER**

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

- 1) Park the machine on a hard and flat surface. Lock the parking brake.
- 2) Lift the loader arm up and install the safety lock strut.
- 3) Run the engine until the oil is warm enough if it is cold. Stop the engine.
- 4) Open side cover panel.
- 5) Put a container under the filter to catch spill of engine oil.
- 6) Remove the filter cartridge by a strap wrench or similar tool and discard the filter cartridge. Ensure that the Adaptor is secure in the filter head.

Check the waste oil. If there are metal chips or dust mixed with oil, contact your HIDROMEK Authorized Service.

The oil filter can not be used again since it is cartridge type.

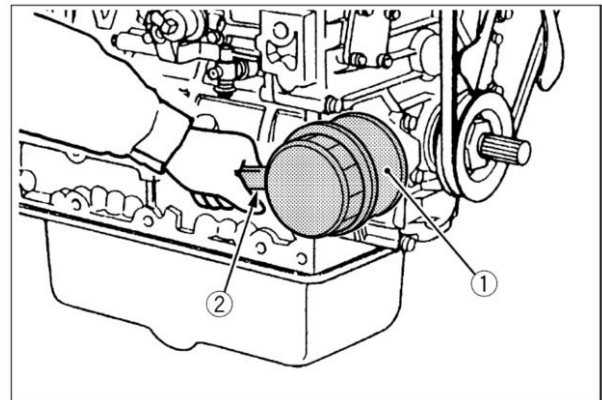
- 7) Clean the filter head.
- 8) Lubricate the top of the cartridge seal with clean engine oil.
- 9) Fit the new cartridge and tighten it by hand only. Do not use a strap wrench.
- 10) Remove the tray and discard the old lubricating oil as per local laws and regulations.
- 11) Ensure that there is enough oil in the sump. Check it again with the dipstick. Fill with correct grade of oil if necessary. See TABLE of LUBRICANTS & FLUIDS.

**WARNING**

As the filter bowl will be empty after the filter element is replaced, starting the engine may cause crankshaft bearing damage due to lack of pressure in oil galleries. To prevent it, crank the engine with the starter with the fuel CUT OFF. Do not crank more than 20 seconds.

12) To ensure that the engine will not start before the oil pressure builds up, disconnect the electrical stop control of the fuel injection pump. Turn the starter switch to 'III' (START) position and keep it there without exceeding 20 seconds limit until the engine oil pressure light turns off.

13) Start the engine after reconnecting the electrical stop control of the fuel injection pump. Check for engine oil leaks around the Filter. Re-check the oil level after the engine is cool and add oil if necessary.



- (1) Oil filter cartridge
- (2) Remove with a filter wrench
(Tighten with your hand)

5.11.5. CHANGING FUEL FILTER ELEMENTS**CAUTION**

Replace the fuel filter cartridge periodically to prevent wear of the fuel injection pump plunger or the injection nozzle, due to dirt in the fuel.

WARNING

Clean up all spilled fuel. Diesel fuel is flammable, spilled fuel can cause fire.

- 1) Place the machine on flat ground. Apply the parking brake.
- 2) Lift the loader arm up and install the safety lock strut. Either place the backhoe bucket on the ground or lock it on the side shift frame.
- 3) Stop the engine and take the starter key.
- 4) Use the starter key and open the engine hood. Open the side cover.
- 5) Locate the filter on the engine.
- 6) Place a container under the filter assembly to collect spilt fuel.
- 7) Thoroughly clean the outer surface of engine fuel filter assembly. If there is fuel in the filter then open the drain plug and drain the fuel.
- 8) Loosen the pre-filter casing. Remove the casing and element from the pre-filter head. Remove the pre-filter element from the casing. Press down on the pre-filter element against the spring pressure and rotate it to the left to release it from the filter casing. Then, discard it.

On fuel primary filter, remove the cartridge type filter casing and discard it.

- 9) Fit a new seal to the casing and apply clean fuel lightly on the seal face.

- 10) Ensure that the thread on the inside of the filter element is not damaged.

Fit the filter assembly to the filter head and tighten by hand until it contacts the filter head. Tighten the assembly a further 1/4 of a turn by hand. Do not use a strap wrench. Do not use a tool to tighten the filter assembly. Close the drain tap and remove the container.

Put the new filter element inside the fuel pre-filter casing and press it down against the spring pressure, rotate it to the right to lock it into the casing.

- 11) Before the starter motor is engaged, operate the lift pump for one minute to bleed air from the fuel

filter. Read "BLEEDING AIR OF THE FUEL SYSTEM".

- 12) Start the engine and check for fuel leaks around the filter.

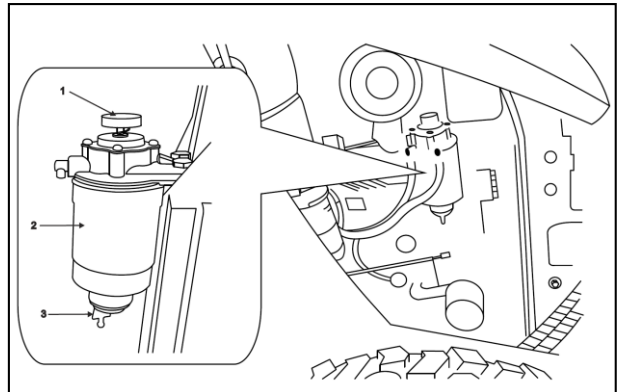


Figure – Fuel filter

- (1) Air bleed pump
- (2) Fuel filter element
- (3) Drain plug

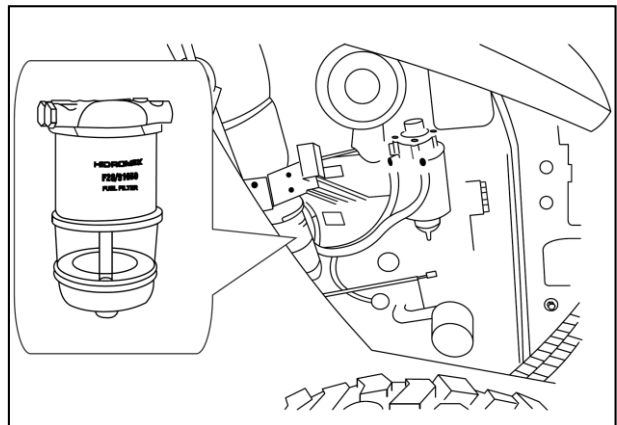


Figure - Fuel Pre-filter

CAUTION

Use filter elements recommended by HIDROMEK. Use of a wrong element can cause serious damage on the fuel injection pump.

CAUTION

When the fuel pipes are not installed, plug them at both ends with clean cloth or paper to prevent dirt from entering. Dirt in the pipes can cause fuel injection pump malfunction.

CAUTION

The pre-filter canister and main filter elements must be renewed together. Do not allow dirt to enter the fuel system. Before a connection is removed, clean the area around the connection thoroughly. After a component has been disconnected, fit a suitable cover to all open connections.

5.11.6. CHARGING THE BATTERY

Be careful not to let the battery electrolyte contact your body or clothing.

Wear eye protection and rubber gloves, since the diluted sulfuric acid solution burns skin and eats holes in clothing. Should this occur, immediately wash it off with running water and get medical attention.

Mishandling of the battery shortens the service life and adds to maintenance costs. Obtain the maximum performance and the longest life of the battery by handling properly and with care.

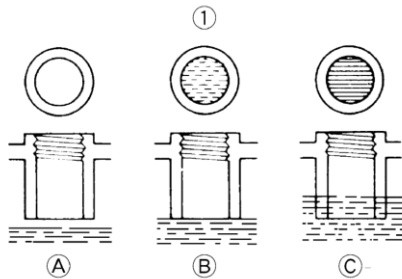
Engine starting will be more difficult, if the battery charge is low. Be careful to recharge it at an early occasion before it is too late.

When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery. When charging the battery, remove the battery vent plugs.

When disconnecting the cable from the battery, start with the negative terminal, and when connecting them, start with the positive terminal first.

DO NOT check the battery charge by placing a metal object across the terminals. Use a voltmeter or hydrometer.

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



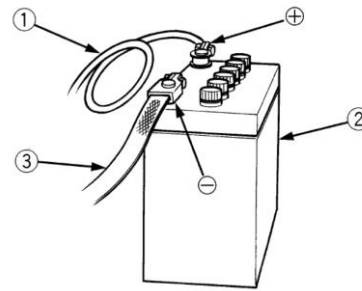
- (1) Battery electrolyte level
(A) "TOO LOW"
(B) "PROPER"
(C) "TOO HIGH"

2. To slow charge the battery, connect the charger positive terminal to the battery positive terminal, and the negative to the negative, then recharge in the standard fashion.

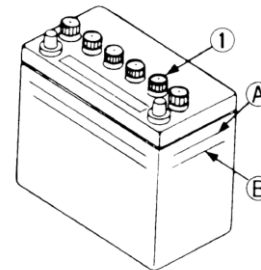
3. Quick recharging charges the battery at a high rate in a short time. This is only for emergencies.

4. Recharge the battery as early as possible, or battery life will be extremely shortened.

5. When exchanging an old battery for a new one, use battery of equal specifications.



- (1) Thick cable red(+)
(2) Battery case
(3) Earth cable black(-)



- (1) Plug
(A) "HIGHEST LEVEL"
(B) "LOWEST LEVEL"

**WARNING**

Connect the charger positive terminal to the battery positive terminal, and negative to the negative.

When disconnecting the cable from the battery, start with the negative terminal first.

When connecting the cable to the battery, start with the positive terminal first.

If reversed, the contact of tools on the battery may cause a short.

5.11.6.1 DIRECTION FOR LONG TERM STORAGE

1. When storing the engine for long periods of time, remove the battery, adjust the electrolyte to the proper level, and store in a dry and dark place.

2. The battery naturally discharges while it is stored. Recharge it once a month in summer, and every 2 months in winter.

5.11.6.2 ELECTRIC WIRING

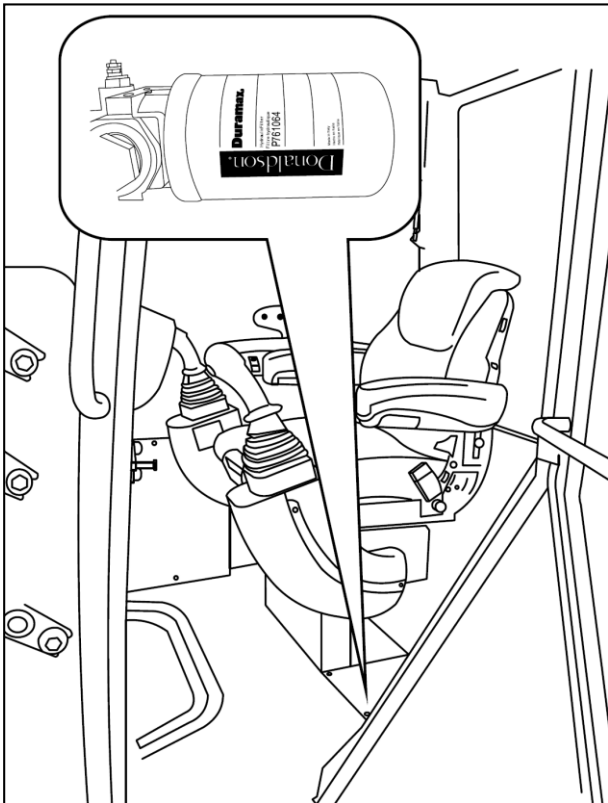
Shorting of electric cable or wiring may cause a fire. Check to see if electric cables and wiring are swollen, hardened or cracked.

Keep dust and water away from all power connections.

Loose wiring terminal parts, make bad connections. Be sure to repair them before starting the engine.

5.11.7. REPLACING PILOT LINE FILTER

1. Find the cover on the cab floor.
2. Loose the screws and remove the cover.
3. Place an appropriate container under the machine to collect the hydraulic oil that will be drained.
4. Turn the pilot filter to counter-clockwise direction and remove it. Use strap wrap if necessary.
5. Apply a thin line of hydraulic oil to the new filter's O-ring. Fit the new filter and tighten it to clockwise direction by hand. Do not use any wrench to tighten.

**5.12. EVERY 400 HOURS INSPECTION & MAINTENANCE**

Perform the following 400 operating hours inspection & maintenance procedures in addition to 8, 50, 100, 200 hours inspection and maintenance procedures.

5.12.1. CHECKING AND ADJUSTING ENGINE VALVE CLEARANCE

Have the engine valve clearance checked and adjusted by HIDROMEK Authorized Service every 400 operating hours.

! WARNING

Engine valve clearance adjustment is an operation that should **ONLY** be performed by authorized services.

Engine Valve Clearance:

Inlet 0,145 mm (0,0057 in.)

Exhaust 0,185 mm (0,0072 in.)

5.12.2. CHECKING AND ADJUSTING THE ENGINE IDLE SPEED

Idle and maximum speed settings of the Engine have already been adjusted by electronic equipment. Changing these settings (idle and max. speed) by the operator or by an unauthorized service or mechanics are extremely dangerous since this may damage the engine and the transmission.

! WARNING

If the seals on the injection pump are broken/removed by unauthorized people or service, warranty is void and null for the failures attributable to this.

! WARNING

Similarly, if the seals on the idle speed adjustment screws are broken/removed by unauthorized people or service, warranty is void and null for the failures attributable to this.

5.13. EVERY 600 HOURS INSPECTION & MAINTENANCE

Perform the following 600 operating hours inspection & maintenance procedures in addition to 8, 50, 100, 200 hours inspection and maintenance procedures.

5.13.1. CHANGING THE HYDRAULIC RETURN FILTER

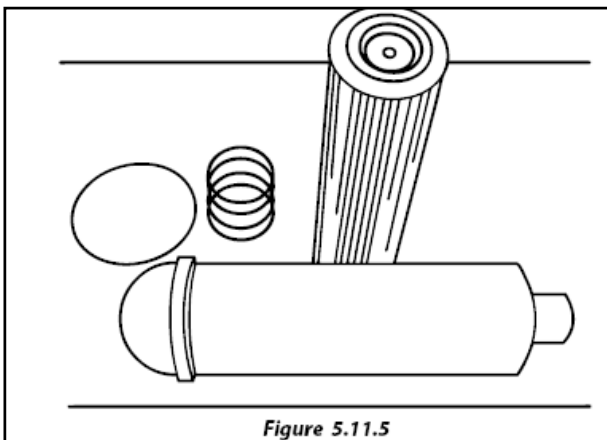
Change the hydraulic tank return filter of a new machine after the first 50 hours of operation. Then, change the it according to "INSPECTION and MAINTENANCE CHART" every 600 hours of operation.

! WARNING

Never change oil or filter of a machine immediately after it has just stopped working. The oil will be extremely hot. Allow the machine to cool down until oil and filter are reasonably cool enough to work with.

! WARNING

Release the residual hydraulic pressure before working on any hydraulic component after stopping the engine.

**! CAUTION**

It is very important that filter elements be replaced in accordance with maintenance schedule provided in this manual. Otherwise fine particles in the oil will cause overheating of the oil resulting in reduced service life. Particles also cause wear and blockage of fine tolerance parts and components such as directional control valves, pumps, cylinders, check-valves and regulators etc and result in machine failure and leaks.

! WARNING

Never check for hydraulic fluid leaks with your hands, use a piece of paper or cardboard instead. Very tiny (pin hole) leaks can result in a high velocity oil stream that will be invisible close to the hose. Escaping fluid under pressure can penetrate the skin and cause a serious injuries. If fluid penetrates into your skin, ask for medical help immediately.

A) Park the machine on a hard and flat surface. Lock the parking brake. Extend the stabilizers and retract the telescopic dipper. Bring the loader bucket and backhoe bucket down to the ground. Stop the engine and take the starter key.

B) Release the residual pressure trapped in the hydraulic system by moving the hydraulic control Levers while the engine is stopped.

C) Release the hydraulic tank pressure by loosening the hydraulic tank cap.

D) Unscrew the hydraulic return oil filter cover with an appropriate spanner.

E) Remove the hydraulic return oil filter and its housing together by holding the wire handle.

F) Discard the filter element and clean the housing thoroughly. check the o-ring and replace if necessary.

G) Check the filter cover o-ring and replace if necessary. Install a new filter element in the housing.

H) Then fit the housing back.

I) Screw the cover by hand and then slightly tighten with a spanner.

! WARNING

DO NOT OVER TIGHTEN THE COVER since this may damage the Cover.



5.14. EVERY 1200 HOURS INSPECTION & MAINTENANCE

Perform every 1200 operating hours inspection and maintenance procedures in addition to 8 to 600 hour inspection/maintenance jobs according to "INSPECTION and MAINTENANCE" CHART.

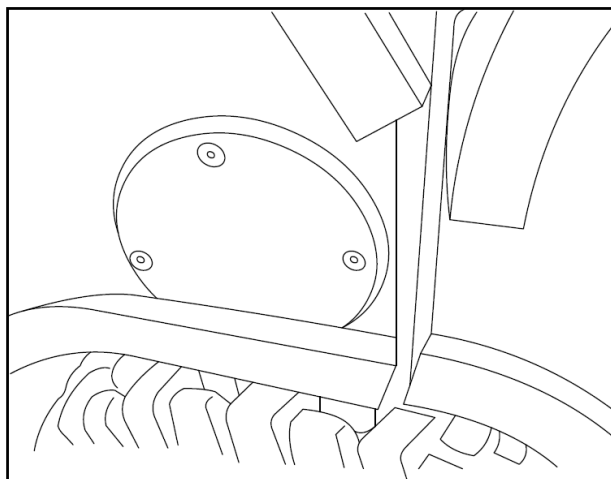
5.14.1. CHANGING THE HYDRAULIC OIL

Change the hydraulic oil in the hydraulic oil tank by removing the plug at the bottom of the tank every 1200 hours of operation. Refill hydraulic oil of recommended brand and type through the tank cap. Refer to "CHECKING HYDRAULIC OIL LEVEL" for proper hydraulic oil level. Refer to the "TABLE of LUBRICANTS & FLUIDS" for the recommended oil.

5.14.2. CHANGING & CLEANING THE SUCTION STRAINER

Suction strainer is screwed on a flange under the hydraulic tank. Suction strainer should be checked and cleaned whenever hydraulic oil is changed. If it is deformed or damaged, it must be replaced with a new one.

- 1) Drain the hydraulic oil in the hydraulic oil tank by removing the plug at the bottom as shown in figure.
- 2) Remove the hose from the flange pipe behind the tank.
- 3) Remove the flange together with the suction strainer by removing 4 flange bolts.
- 4) If the suction strainer is not deformed remove the deposits on the folds of suction strainer by using a non-metal bar and clean the strainer by washing it in kerosene. Then, dry the strainer.



⚠ CAUTION

If the suction strainer will not be replaced it should not be removed from its flange.

- 5) Check the o-ring on the flange. Replace, if necessary.
- 6) Install the assembly to the hydraulic oil tank.
- 7) Install the flange bolts and tighten them.
- 8) Install the hose to the flange pipe behind the tank.
- 9) Refill hydraulic oil of recommended brand and type through the Tank Cap. Refer to "CHECKING HYDRAULIC OIL LEVEL" for proper hydraulic oil level. Refer to the "TABLE of LUBRICANTS & FLUIDS" for the recommended oil.

5.15. EVERY 2000 HOURS INSPECTION & MAINTENANCE

Perform every 2000 operating hours inspection and maintenance procedures according to "INSPECTION and MAINTENANCE" CHART.

5.15.1. DESCRIPTION OF COOLANT

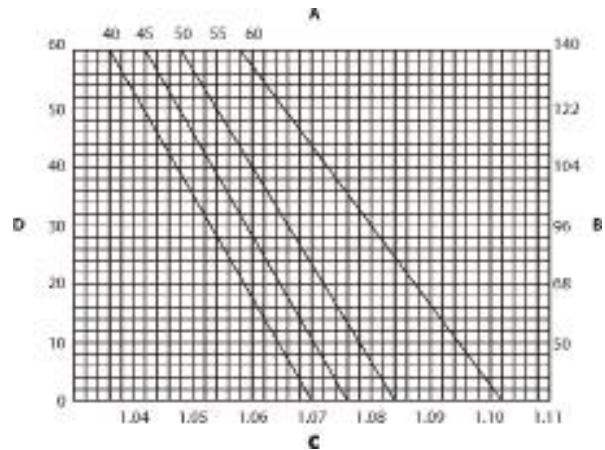
1) Use soft water with the antifreeze in the cooling system. Water hardness should not be higher than 100 ppm (10 F). Water hardness higher than 100 ppm causes scale formation in the cooling system. This reduces the cooling system efficiency and heat transfer, resulting in poor engine performance and/or costly repairs and loss of work power. Use of water contaminated with dust and mud causes clogging of the cooling system. Apart from this, it causes pitting corrosion on the cylinder outer walls in contact with the contaminated coolant.

2) Use ethylene glycol based antifreeze which meets the standards given below. Commercially available antifreezes contain corrosion inhibitors which prevents the corrosion of the cooling system. commonly used corrosion inhibitor additives are sodium nitrite / sodium benzoate. The antifreeze should conform ASTM D 3306-89 or AS 2108 "Ethylene Glycol Based Engine Coolant" BS 6580 "Antifreeze". Adjust the initial dosage of the soft water/antifreeze mixture to 50% antifreeze and 50% water. Do not let the antifreeze concentration drop below 40 % during the later checks. Corrosion inhibiting additives can not protect the cooling System against corrosion if the antifreeze content drops below the % 40.

The specific gravity of the coolant must be checked at least once a year, necessarily before the winter season.

Antifreeze must be changed every 2 years due to the depletion of the corrosion inhibiting additives.

Antifreeze mixture is obtained by mixing the antifreeze with certain amount of soft water. Do not use an antifreeze concentration higher than given in above chart since this adversely affects the cooling system.



A PERCENTAGE of ANTIFREEZE (by volume)

B MIXTURE TEMPERATURE ° F

C SPECIFIC GRAVITY

D MIXTURE TEMPERATURE ° C

* This data in the graph may change due to your antifreeze brand.

3) Even if low temperature protection is not required, use water and antifreeze mixture at recommended concentration as the boiling temperature of the coolant will be increased and corrosion will be prevented accordingly.

5.15.1.1 ENGINE COOLANT FILLING CAP

The cap is pressure type (0.5 bar). It also prevents the vacuum formation through a valve when the cooling system gets cold.

The coolant filling cap rotates more than standard radiator caps when fitting or removing.

**WARNING**

Antifreeze may be harmful. Wear protective equipment when working with antifreeze. Follow the manufacturer's instructions when handling.

5.15.2. CHANGING COOLANT

- 1) Position the machine on a hard and flat place. place the backhoe on the ground. Apply the parking brake.
- 2) Lift the Loader Arm up and install the safety lock strut. Stop the engine and remove the starter key. Disconnect the battery. Allow engine coolant to cool down to avoid burning.
- 3) Remove engine hood.
- 4) Rotate the heater temperature knob on the right hand side Instrument Panel clockwise to its maximum position. See heater / defroster fan switch in DESCRIPTION chapter.
- 5) Remove the filler cap of the cooling system slowly allowing the pressure to release.
- 6) Place an appropriate container under the radiator and engine to collect the coolant that will be drained.

**WARNING**

Risk of burning exists as there will be higher pressure in the cooling system when it is hot. Allow the engine to cool down prior to checking or draining the coolant.

- 7) Locate and remove the drain plug on the right hand side of the engine block in order to drain the coolant from the engine carefully. See figure. Ensure that the drain hole is not restricted.
- 8) Locate and remove the radiator drain plug at the bottom of the radiator to drain the radiator. Alternatively, the hose at the bottom of the coolant reservoir can be removed and lowered down to drain the cooling system. See figure .
- 9) If necessary, flush the cooling system with clean water. In case the contaminants can not be removed by fresh water use power part easy flush (21820122) flushing agent.
- 10) Fit the drain plug (s) and/or connect the coolant reservoir hose.
- 11) Fill the coolant that is prepared according to the instructions given in "DESCRIPTION of COOLANT". See "TABLE of LUBRICANTS & FLUIDS" for correct amount of coolant given there.
- 12) Start the engine and let it idle. Add coolant if needed.
- 13) Fit and rotate the filler cap to tighten.
- 14) Re-start and run the engine until operating temperature is reached. Check for any leaks in the meantime.
- 15) Re-check coolant level according to the instructions given in "CHECKING COOLANT LEVEL".

5.15.3. CHANGING THE CHAIN HOUSING OIL

Oil filling plug of chain housing is shown in the figure. It is the same as on the other side. Follow the procedure below to change the oil in the chain housing ;

- Park the machine on a level and hard ground. Stop the engine. Apply the parking brake. Remove the starter key and leave the machine.
- Remove the plug with a spanner.
- Under the front part of the chain housing, behind the front wheels, there are the drain plugs. Place a container with enough capacity under the drain plug.
- Remove the drain plug and pour the oil into the container.
- Replace the O-rings of the drain plug with new ones and tighten the plug.
- Use proper kind and amount of oil as told in this manual. Fill the oil from the filling plug. Fill until the excessive oil will start to drain out.
- Replace the O-rings of the filling plug with new ones and tighten the plug.

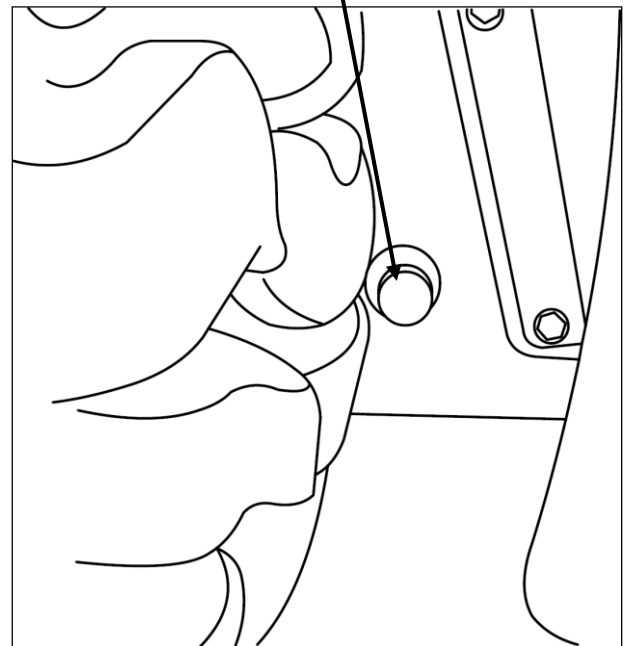
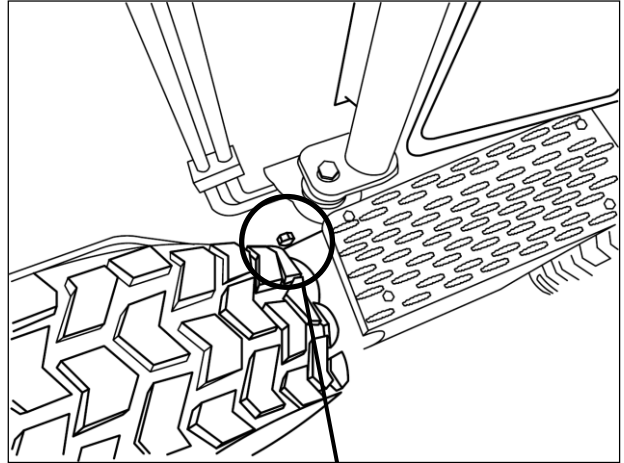


Figure - Oil Level Plug

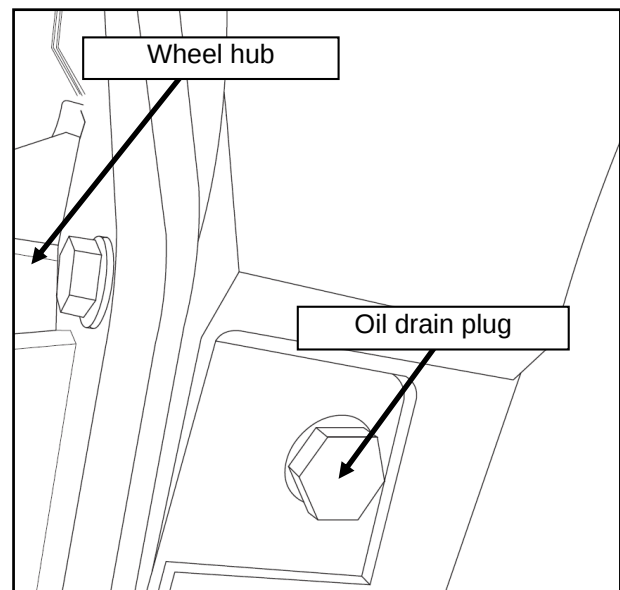


Figure - Oil Drain Plug

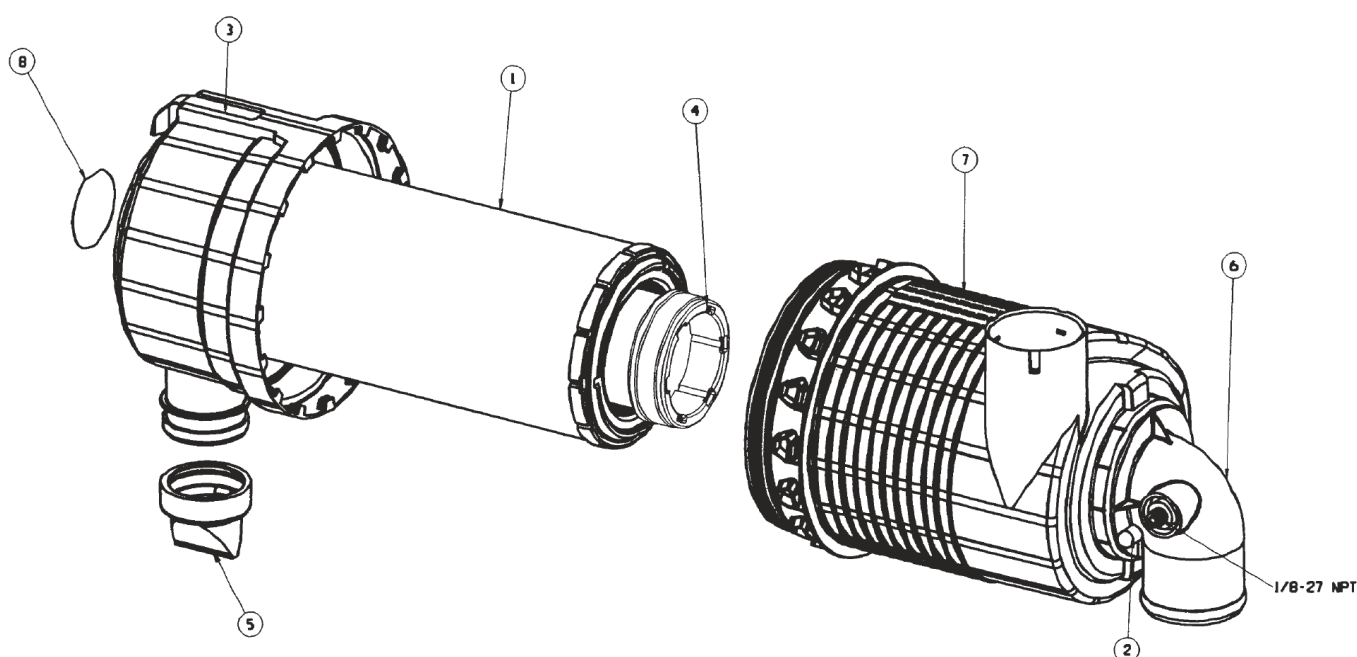
5.16. WHEN NECESSARY**5.16.1. CHANGING ENGINE AIR FILTER**

Engine air filter consists of two filter elements; inner and outer filter elements.

- 1) Clean the pre-filter (dust separator).
- 2) Raise the loader arm and lock it.
- 3) Stop the engine and remove the starter key.
- 4) Remove the left cover of the engine compartment.
- 5) Remove outer filter element (1) gently. Accidentally bumping it while still inside means dropped dirt and dust that will contaminate the clean side of your filter housing.

- 6) Remove wing nut. Remove element. Take care not to damage the element while removing. Clean the housing (7) and rubber dust valve (5).

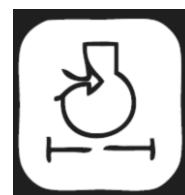
- 7) To Fit a new filter element Insert the new outer filter into the housing after coating the seal with soapy water and then remove it. If the element has been properly seated, there should be a seal mark on the inner bottom of the housing. Re-fit the outer filter element and make sure it is properly seated. Tighten the wing nut. Check that all the hoses are in good condition and their clamps are tight.

**CAUTION**

Do not clean the air filter element by any means. Provide spare elements in order to replace immediately when the engine air filter clogged warning light is on.

5.16.1.1 AIR FILTER CLOGGED WARNING LIGHT

Air filter clogged warning switch is a vacuum switch that triggers at a pressure difference of 508 – 558 mm water. Vacuum switch gauge is fitted between air filter and inlet manifold. Air filter clogged warning light is on the right hand side instrument panel. This red warning light turns on along with an audio alarm should the engine air filter be clogged.



5.16.2. ADJUSTING THE BELT TENSION

- 1) Park the machine on hard and flat ground.
Lock the parking brake.
Put the drive control lever to neutral position.
Lift the loader arm up and lock it. Place the backhoe on the ground.
Stop the engine, remove the starter key and disconnect the battery cable.
- 2) Loosen the pivot fasteners (1) of the alternator and fasteners of the adjustment link (2). See figure.
- 3) Change the position of the alternator to give the correct tension.
- 4) Tighten fasteners of the adjustment link (2) first and then pivot fasteners of the alternator (1). See Figure.
- 5) Check the belt tension again to ensure that it is still correct.

**WARNING**

When the belt is replaced by a new one, the belt tension must be checked again following the first 20 hours of operation.

**WARNING**

Do not try to turn the engine by pulling on the drive belt.

5.16.3. BLEEDING THE FUEL SYSTEM**DANGER**

Do not bleed a hot engine as this could cause fuel to spill onto a hot exhaust manifold creating a danger of fire.

Air bleeding of the fuel system is required if;
after the fuel filter and pipes have been detached and refitted;
after the fuel tank has become empty; or
before the engine is to be used after a long storage.

PROCEDURE

1. Fill the fuel tank to the fullest extent. Open the fuel filter lever.
2. Open the air vent cock on top of the fuel injection pump.
3. Turn the engine, continue it for about 10 seconds, then stop it, or move the fuel feed pump lever by hand (optional).
4. Close the air vent cock on top of the fuel injection pump.

**WARNING**

Always keep the air vent cock on the fuel injection pump closed except when air is vented, or it may cause the engine to stop.

**WARNING**

If the engine stops due to air in the fuel system, check that you have enough fuel in the tank and repair any leakages. DO NOT operate the engine until the air is totally bled from the fuel injection pump.

**WARNING**

Operate the engine at low idle speed for a minimum of 2 minutes immediately after air has been removed from the fuel system. This will ensure that the pump is free of air and prevent any damage to the internal parts of the pump because of metal to metal contact.

**WARNING**

If the engine runs properly for a short time and then stops or runs roughly, check for air in the fuel system. If there is air in the fuel system, possibly, there is a leakage in the low pressure side of the system.

5.16.4. REPLACING FUSES

Replace the “BLOWN” or “FAULTY” fuses according to the below given procedures while the engine is stopped and the starter switch is at “OFF” position:

1) Locate the fuse box lid on the front part of the right hand side console. Open the fuse box lid Lock by pushing on both ends of the fuse box lid lock. See figure.

2) Open fuse box lid by moving it forward. See figure.

3) Locate and remove the “FAULTY” fuse. Replace the fuse with a new fuse in the same amperage.



WARNING

Never install a fuse with a higher rating than indicated. Otherwise there will be a risk of fire on the main board. Never use a “jumper” instead of a fuse.

4) Refer to the decal on the backside of the lid or to the figure on the next page for fuse ratings and their respective functions.



WARNING

Never replace a faulty fuse while the starter switch is at “ON” position or while the engine is running. Otherwise serious material damage may result.



LAYOUT OF FUSE BOARD

A	15	15	10	10	10	15	15	5
	MAIN BOARD	MAIN BOARD	CONTROL PANEL	STOP	BRAKE VALVE HYR. CLAMP VALVE	MAIN CONTROL VALVE RELAY	HYDRAULIC VALVE SAFETY VALVE	PROXSMITY SVIC
	5	15	15	15	15	15	10	10
B	PARKING LIGHTS	LOW BEAM	HIGH BEAM	BEACON	FRONT WORKING LIGHTS	REAR WORKING LIGHTS	HAZARD WARNING	HORN
	20	15	5	20	10	10	5	15
	STARTER RELAY	HEATER	CHARGE	A / C	FRONT WIN WIPER	REAR WIN WIPER	INTERIOR LIGHTING	CIGARETTE LIGHTER
C	SPARE 5 A		SPARE 10 A		SPARE 15 A			

LAYOUT OF RELAY BOARD

		FRONT WIN WASHER	REAR WIN WASHER
HORN RELAY	A/C RELAY	PILOT CONTROL RELAY	JOYSTICK SAFETY RELAY

M117000160

5.16.5. MAINTENANCE OF AIR-CONDITIONER**⚠ WARNING**

Washing with organic solvent (gasoline, trichlene, thinner, etc.) is strictly prohibited.

Replace the filter when it is clogged frequently or damaged seriously.

Air conditioning condenser is in front of the engine radiator. Clean the condenser with pressurized water or air once a week. Clean more frequently under heavy working conditions or in dusty environment.

⚠ WARNING

Using high pressure water or air (above 3 bars) when cleaning the condenser may damage the condenser.

CHECKING THE REFRIGERANT OF THE AIR CONDITIONER:

1) Start the engine and adjust the engine throttle to 1500 – 1600 rpm.

2) Set the machine to the conditions shown below when checking the refrigerant.

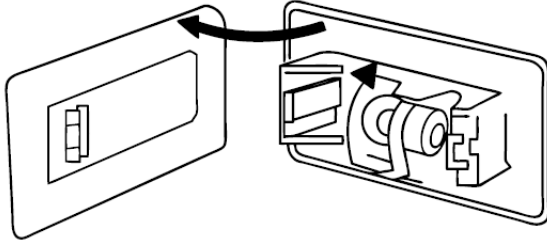
- Air-conditioner switch: ON
- Air-conditioner fan speed switch :3 (Very Fast)
- Doors/windows : CLOSED

3) Follow the procedure below and check the refrigerant volume by looking through the sight glass on the upper part of receiver-dryer.

PRESSURE	REFRIGERANT'S CONDITION
Ⓐ 	
ACCEPTABLE PRESSURE	After the air conditioner is turned on, bubbles appear sporadically. The refrigerant becomes transparent, then turns a light milky white.
Ⓑ 	
LOW PRESSURE	No bubbles are visible after the air conditioner is turned on.
Ⓒ 	
HIGH PRESSURE	After the air conditioner is turned on, bubbles appear continuously.

5.16.6. REPLACING LIGHT BULBS

Replace the “BLOWN” or “FAULTY” light bulbs while the engine is stopped and the starter switch is at “OFF” position according to the procedures given below :



- 1) Turn off the switch of the light whose bulb is blown or faulty.
- 2) Remove the ceiling light assembly by prying it at its edge using a screw driver or a similar tool.

**WARNING**

After removing the ceiling light assembly try to determine the cause of the fault unless the light bulb is “blown” definitely. Problems in electrical circuitry, especially contact points on the light bulb may cause faults in lighting.

- 3) Push and rotate the “FAULTY” light bulb counter-clockwise to remove it. Replace the light bulb with a new light bulb in the same capacity.
- 4) Refer to below given table for correct capacity of Light Bulbs.

**WARNING**

Never replace a faulty light bulb with another light bulb in higher capacity.

LAMP	VALUE
Head lights low/high beam	55 / 60 W
Working lights	55 W
Warning lights	2 W
Direction indicator lights	21 W
Parking lights	5 W
Ceiling light (in cab illumination)	5 W
Rotating beacon	55 W

NOTES (For use by operator)

This image shows a full page of a document template designed for handwriting practice. It consists of numerous horizontal dotted lines spaced evenly across the entire page, providing a guide for letter height and placement. There are no margins, text, or other markings present.

6. SPECIFICATIONS

The specifications found in this section are given on the Standard HMK62SS series Hydraulic Backhoe Loaders as manufactured by HIDROMEK INC. No modifications or options are taken into consideration with respect to these specifications.

6.1. TECHNICAL SPECIFICATIONS OF HMK 62SS

ENGINE	
Manufacturer	KUBOTA
Model	V2403MT-E3B
Type	4 Stroke, water cooled, In line, turbo charged
Number of cylinders	4
Bore x stroke	87 mm x 102.4 mm
Displacement	2434 cm ³
Rated output (acc. To ISO/TR 14396)	59 HP, 44 kW (2700 rpm)
Max torque	160 Nm (1600 rpm)
Firing order	1 – 3 – 4 - 2
Features	High power and torque output Meets USA EPA Interim Tier4 and European EC Stage III-A exhaust emission regulations

TYRES		
Front	10x16.5 10PR	76 psi
Rear	10x16.5 10PR	76 psi

HYDRAULIC SYSTEM	
Main pump	60.75 l/min (2700 rpm) 220 bar
Travel pump	243 l/min (2700 rpm) 400 bar

FEATURES
ROPS/FOPS cab, LCD Display, 4 in 1 Bucket, Mechanical Loader Quick Hitch, Auxiliary Hydraulic Supply to Loader, Seat Mounted Servo Controlled Joysticks, Self Leveling, Rotating Beacon, Battery Isolator, Reverse Alarm, External Mirrors, Working Lights, Road Lights, Seatbelt, Air conditioner, Hydraulic breaker installation line

WEIGHT *	3800 kg
* It is the weight of a machine that equipped with 420 mm backhoe bucket, shovel without forks, with 75 kg operator and full fuel tank.	

OPTIONAL ATTACHMENT
Hydraulic breaker, Dozer blades, Standard Bucket, Augers, Agricultural Grab, Forks mounted on quick coupler

OPERATOR'S CAB
Ergonomic & Esthetic Interior Design provides maximum space Wide Visual Angle Full ROPS / FOPS cab with sound proofing Two joysticks for all controls ergonomically mounted onto seat Air conditioning option Multi-functional Seat with seatbelt Easy to read full color LCD display Ergonomic & Elegant hand and foot Throttle Battery isolator Ease of service maintenance Well protected fuse box inside the operator cab

LOADER PERFORMANCE (ISO)	
Loader bucket capacity	0.35 m ³
Loader bucket maximum breakout force	2883 kgf
Loader arm maximum breakout force	2600 kgf
Lifting capacity at max height	500 kg

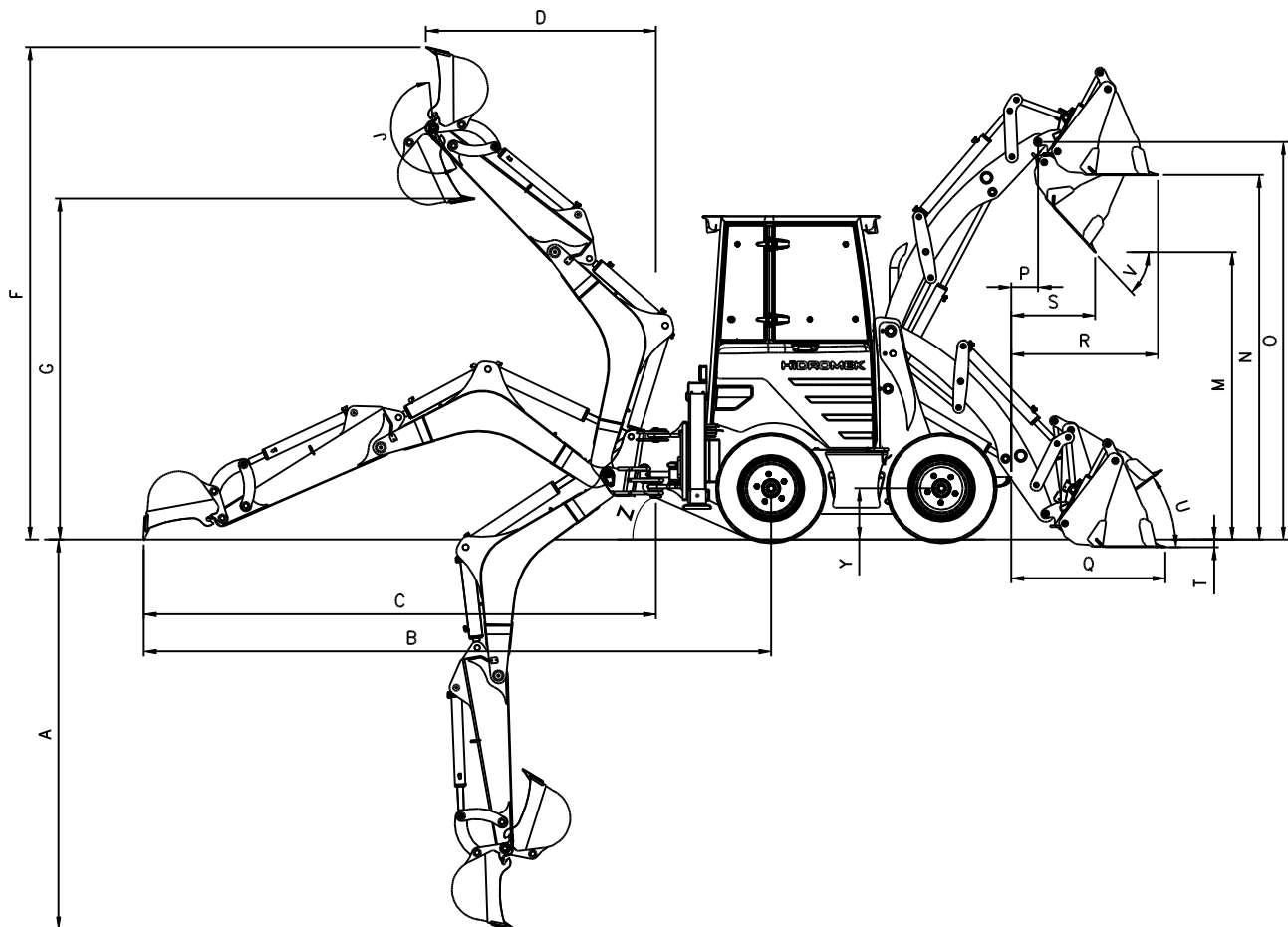
*Limited with hydraulic power

BACKHOE PERFORMANCE (ISO)	
Bucket ram Max breakout force	1985 kgf
Arm breakout force	1500 kgf
Max. Height lifting capacity	332 kg

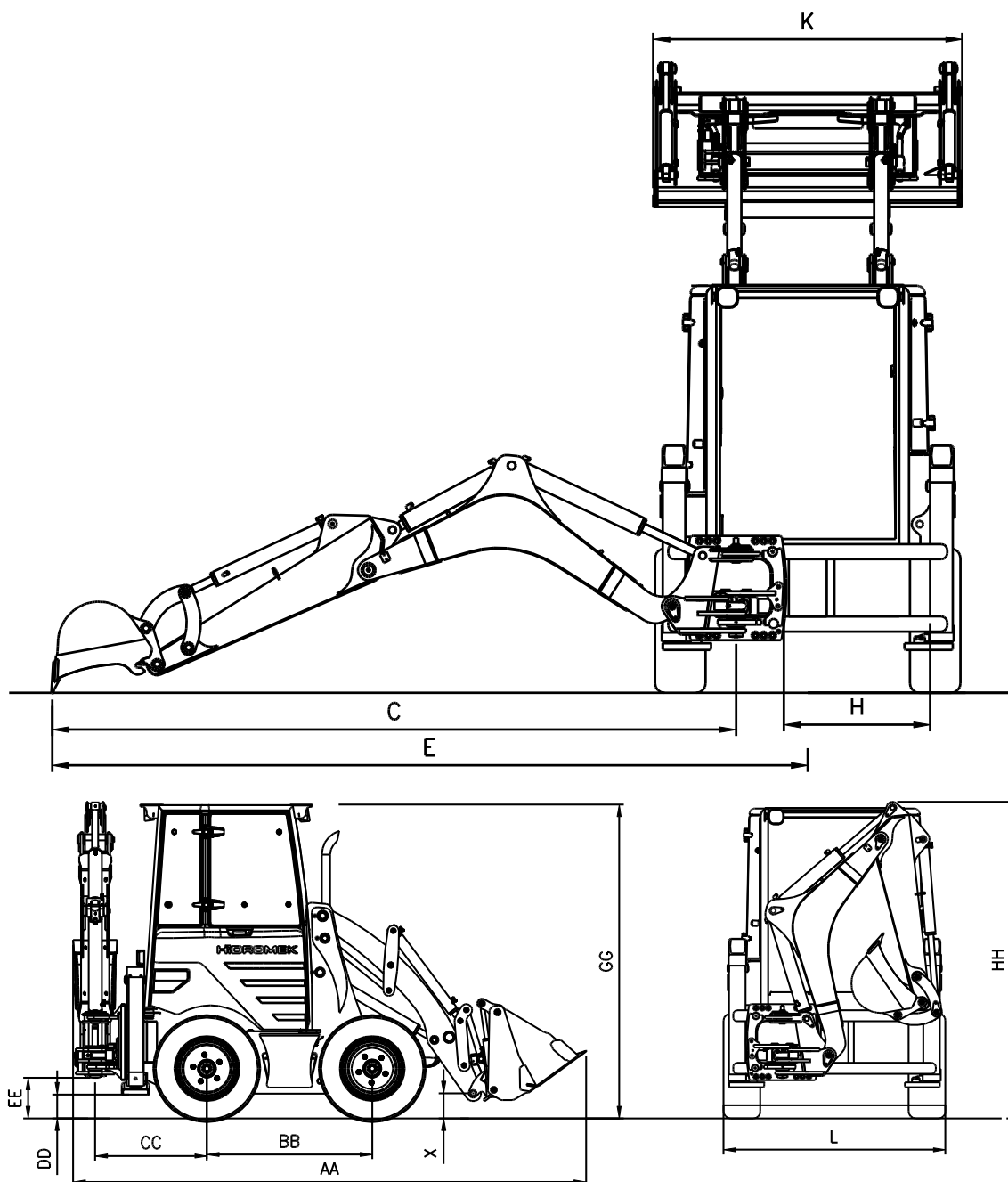
*Limited with hydraulic power

FILLING CAPACITIES (liter)	
Engine oil	9.5
Coolant	8.4
Fuel tank	52
Hydraulic oil	47

Note: For special requests please contact with your Hidromek Dealer.

6.2. HMK 62 SS WORKING RANGES & DIMENSIONS (IN MM)

No	Definition	Values with Standard Boom (mm)
A	Maximum digging depth	2751
B	Ground level to rear wheel center	4419
C	Ground level to slew center	3608
D	At full height to slew center	1620
E	To center line of machine	3986
F	Operating height	3472
G	Maximum load over height	2400
H	Total kingpost travel	756
J	Bucket rotation	207,5°
K	Shovel width	1630
L	Rear frame width	1610
M	Dump height	2022
N	Load over height	2567
O	Loader hinge pin height	2800
P	Pin forward reach	190
Q	Reach at ground (toe plate horizontal)	1085
R	Maximum reach at full height	1033
S	Reach at full height	591
T	Dig depth	55
U	Roll back at ground	36°
V	Dump angle	47°
Y	Front wheel center to ground	361
Z	Departure angle	24°
W	Rear wheel center to ground	361
X	The distance between pin center and ground	182

HMK 62 SS WORKING RANGES & DIMENSIONS (IN MM)


No	Definition	Values with Standard Boom (mm)
AA	Total travel length	3720
BB	Axle centerline distance	1214
CC	Slew center to rear axle center distance	803
DD	Stabilizer feet clearance	228
EE	Kingpost clearance	295
GG	Cab roof height	2275
HH	total travel clearance	2298
R1	The distance of rear wheel center	1343
F1	The distance of front wheel center	1343

6.3. LIFTING REGULATIONS AND SAFE WORKING LOADS (SWL)

6.3.1. LIFTING REGULATIONS

Safe working load is defined as the maximum load a lifting equipment or device can lift safely. The SWL values given are for guidance with the machine on a hard and level ground, and with a standard configuration. It is the responsibility of the operator not to exceed the capacity of the machine and to take the ground conditions into account, the territory and type of attachments used when handling loads. Under no circumstances must the rated loads be exceeded.

It is the duty of the owner and/or operator to fully understand and comply with the laws, rules and regulations when using this machine both for earthmoving and for lifting/craning. Consult your HIDROMEK Dealer for more information.

The backhoe loader is defined as an 'earthmoving equipment'. However it can be used for lifting objects (craning) provided that it is equipped with a suitable lifting equipment. Otherwise, your machine can not be used for handling objects.

To be able to use your machine for lifting as a crane you must have suitable provisions on the machine for attaching of hoisting equipment (e.g. hook, shackle, lifting eye etc.) recommended or supplied by the manufacturer. When using your machine for lifting purposes make sure that the hoisting equipment (e.g.: hook, shackle, lifting eye) is intended for that type of machine, has a designated safe working load which is marked on the equipment and shown on the document accompanying it.

Observe also rules and regulations concerning lifting&handling operations effective in your country/region.

WARNING

Replacement of front attachment may change the front reach and dimensions of the machine compared to those given in the "TECHNICAL SPECIFICATIONS" for a standard machine. Always keep this in mind and pay attention while driving and working with the attachments.

6.3.2. SAFE WORKING LOADS

WARNING

You must consider safe working load of the machine when lifting objects. Safe working load indicated on the lifting equipment (hook, shackle, chain etc.) may be higher than the SWL of the machine. NEVER exceed SWL of the machine. Refer to the operating & maintenance manual of your machine for the safe working loads. For a safe work practice, SWL of both the machine and the lifting equipment must be considered.

CAUTION

Safe working loads specified here are obtained with the machine working with a Standard configuration in accordance with SAE J31 and on hard and level surface conditions. Poor ground conditions and inclined terrain conditions will affect the lifting capacities. Therefore it is the operator's responsibility to consider the ground conditions while lifting heavy loads.

BACKHOE END

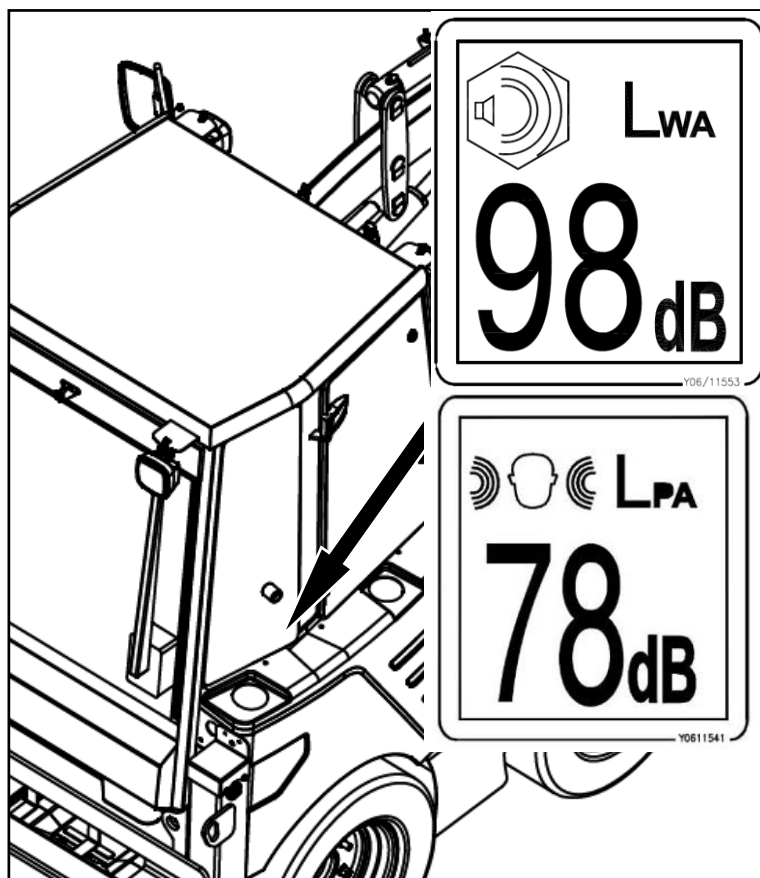
See table given below for Safe Working Loads when lifting with bucket. Keep in mind that the table is valid for lifting operations with the backhoe with bucket installed. The ratings in the table are taken at the backhoe bucket hinge pin, with the machine raised on hard and flat ground on the loader bucket and stabilizers.

For more information on lifting regulations and checking operations contact your HIDROMEK Dealer.

WARNING

Do not move the machine with a load freely suspending on the backhoe (craning). Make sure the bucket is always attached, and you use a lifting equipment with adequate capacity. Make sure the sling is properly attached, otherwise the load may swing out of control and cause accident. Ask assistance of a signalman if necessary and make sure you understand the signaling. Stabilize the suspended load by use of ropes to avoid swinging. Keep sling as short as possible. Move the machine very slowly if necessary. Never suspend the load over people or over an operator's cab or a canopy.

6.4. SOUND and VIBRATION



6.4.1. SOUND

Sound pressure level at operator's position	(According to ISO 6396 and 2000/14/EC)	78 dB (A)
Air borne sound power level	(According to ISO 6395)	98 dB (A)

6.4.2. VIBRATION

Declared vibration emission values for HMK 62 SS backhoe loaders in accordance with EN 1032:2003 are as follows:

Whole Body Vibration

Measured vibration emission value, $a = 0,994 \text{ m/s}^2$.
Uncertainty, $K = 0,034 \text{ m/s}^2$.

Hand Transmitted Vibration

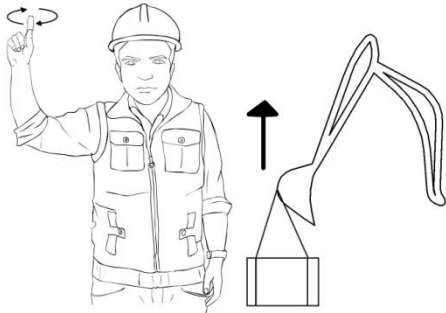
Hand transmitted vibration values are lower than $2,50 \text{ m/s}^2$.

7. MISCELLANEOUS**7.1. HAND SIGNALS****USAGE OF HAND SIGNALS**

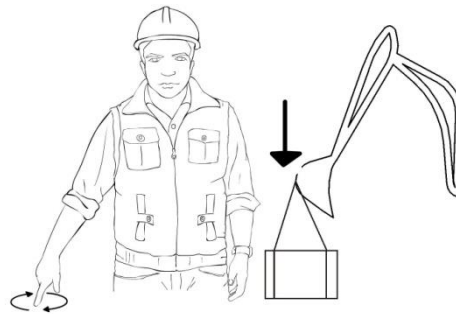
Do not begin operation until signals are clearly understood.

If non-standard signals are going to be used, be sure you and your signal person agree on them beforehand. The operator shall respond to operating signals only from the appointed signal person, but shall obey a stop signal at any time from anybody. A signal person, fully qualified by training experience.

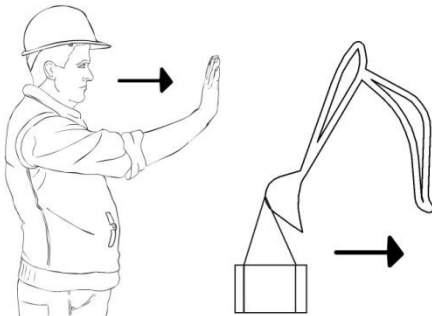
A signal person must be in a sufficiently lighted area to be clearly visible to the operator during nighttime operations.

USE HAND SIGNALS WHILE OPERATING**Raise load vertically**

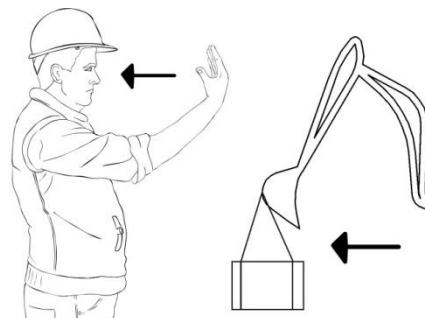
Turn your face to the operator. With either forearm vertical, forefinger pointing up, move hand in small horizontal circle.

**Lower load vertically**

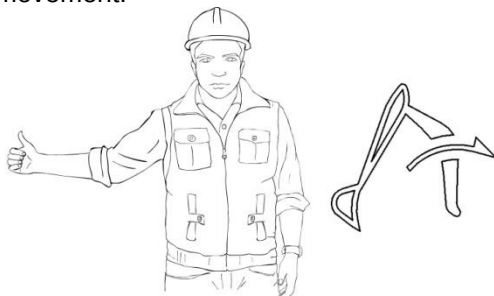
Turn your face to the operator. With either arm extended downward, forefinger pointing down, move hand in small horizontal circle.

**Move load in horizontally**

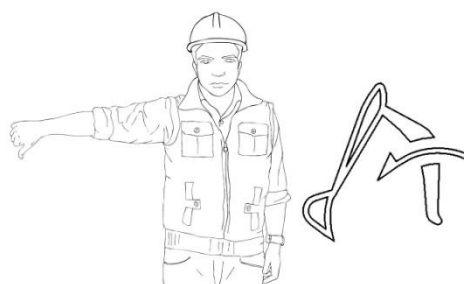
Turn your face to the operator. With either arm extended, hand raised and open toward direction of movement, move hand in direction of required movement.

**Move load out horizontally**

Turn your face to the operator. With either arm extended, hand raised and open toward direction of movement, move hand in direction of required movement.

**Raise boom**

Turn your face to the operator. With either arm extended horizontally, fingers closed, point thumb upward.

**Lower boom**

Turn your face to the operator. With either arm extended horizontally, fingers closed, point thumb downward.

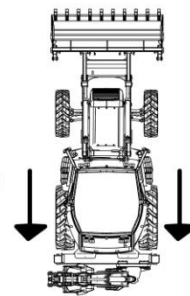
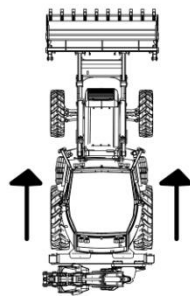


“ARM” inward

Turn your face to the operator. With both hands clenched, point thumbs inward.

“ARM” outward

Turn your face to the operator. With both hands clenched, point thumbs outward.



Travel to forward

Turn your face to the operator. Move fists in vertical circle about each other in direction of track or wheel rotation

Travel to backward

Turn your face to the operator. Move fists in vertical circle about each other in direction of track or wheel rotation

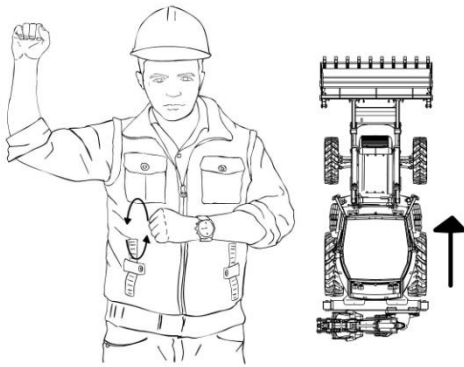


Close bucket

Turn your face to the operator. Hold one hand closed and stationary. Rotate other hand in small vertical circle with forefinger pointing horizontally at closed hand.

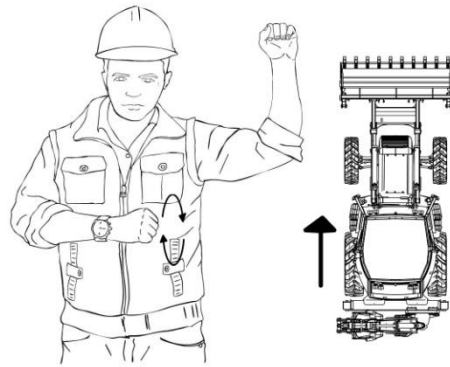
Open bucket

Turn your face to the operator. Hold one hand closed and stationary. Rotate other hand in small vertical circle with forefinger pointing horizontally at open hand.



Turn to left

Turn your face to the operator. Raise forearm with closed fist indicating inside of turn. Move other fist in vertical circle indicating direction of track or wheel rotation



Turn to right

Turn your face to the operator. Raise forearm with closed fist indicating inside of turn. Move other fist in vertical circle indicating direction of track or wheel rotation



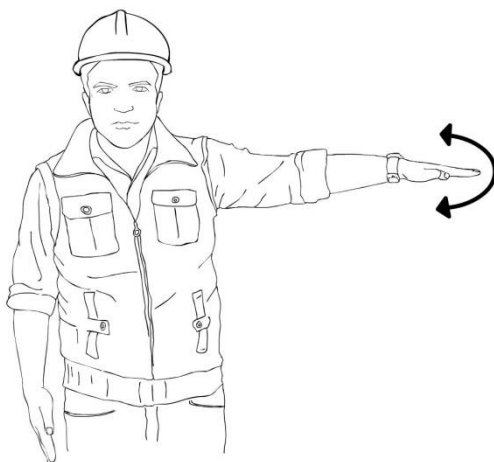
This far to go

Turn your face to the operator. With hands raised and open inward, move hands laterally, indicating distance to go.



Move slowly

Turn your face to the operator. Place one hand motionless in front of hand giving motion signal. (Raise load slowly as shown.)



Stop

Turn your face to the operator. With either arm extended laterally, hand open downward, move arm back and forth.



Emergency stop

Turn your face to the operator. With either arm extended laterally, hands open downward, move arms back and forth.



Stop engine
Turn your face to the operator. Draw thumb or
forefinger across throat.

7.2. TABLE OF TORQUE VALUES FOR FASTENERS

METRIC BOLTS							
Size	Diameter	Torque Grade 8.8		Torque Grade 10.9		Torque Grade 12.9	
(inch)	(mm)	Nm	kgf.m	Nm	kgfm	Nm	kgfm
M5	5	7	0.7	8.5	0.85		
M6	6	12	1.2	14	1.4		
M8	8	28	2.8	35	3.5	41	4.1
M10	10	56	5.7	69	6.9	83	8.3
M12	12	98	10	120	12.0	145	14.5
M16	16	244	25	295	29.5	355	35.5
M18	18	290	29	405	40	485	48
M20	20	476	48	580	58.0		
M22	22	550	55	780	78	930	93
M24	24	822	84	1000	100.0		
M30	30	1633	166	2000	200.0		
M36	36	2854	291	3450	345.0		

UNF (Grade S)			
Size	Diameter	Torque	
(inch)	(mm)	Nm	kgfm
1/4 "	6.3	14	1.4
5/16"	7.9	28	2.8
3/8"	9.5	49	5
7/16"	11.1	78	8
1/2"	12.7	117	12
9/16"	14.3	170	17.3
5/8"	15.9	238	24.3
3/4 "	19	407	41.5
7/8"	22.2	650	66.3
1"	25.4	970	99
1 1/4"	31.7	1940	198
1 1/2"	38.1	3390	345

Bolts and screws of engine, transmission, torque converter and axles must be tightened according to specified values in manufacturer's manuals.

7.3. FACTORY AND SERVICE DEPARTMENT

HEAD OFFICE AND FACTORY	
Adress	: Organize Sanayi Bölgesi Osmanlı Cad. No:1 06935 Sincan/ANKARA
Phone	: +90 312 267 12 60 (20 Lines)
Fax	: +90 312 267 12 39
İnternet	: www.hidromek.com.tr
e-mail	: info@hidromek.com.tr

AFTER SALES SERVICES DEPARTMENT	
Adress	: Şehit Osman Avcı Mahallesi No: 479 (İstanbul Yolu 17. km) Eryaman / ANKARA
Phone	: +90 312 280 87 40 (8 Lines)
Fax	: +90 312 280 87 48
Spare Parts Fax	: +90 312 280 87 49
e-mail	ssh@hidromek.com.tr

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