

# **HY280 MINI SKID STEER LOADER**



**TAIAN HYSOON MACHINERY CO., LTD**

## **FOREWORD**

The manual is an important component of your equipment. It contains safety information and operation instructions to help you use and maintain your HY280.

Read the manual carefully before using the machine. Keep it along with your equipment all the times for reference. When selling it, please transfer the manual to the new owner.

If a copy of the manual is needed, please contact HYSOON dealer. Please visit the website: [www.hysoon.cn](http://www.hysoon.cn), it will help you locate the dealer.

The descriptions and specifications are subject to change without notice.

HYSOON reserves the rights to improve equipments. Some improvements may have taken place after the publication of the manual. Please contact the dealer for the latest information.

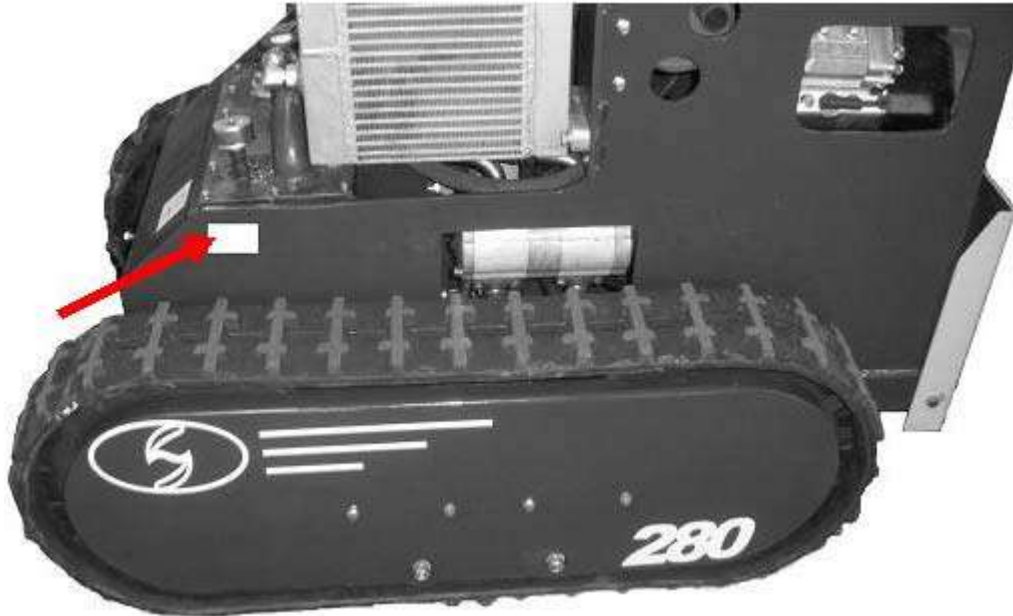
Thanks for purchasing and using HYSOON equipment.

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# 1. SERIAL NUMBER LOCATION

Record serial numbers and date of purchase on the line provided below.  
The serial number is located as shown in the picture.



HY280 Serial Number	
Engine Serial Number	
Date of Manufacture	
Manufacturer's Address	TAIAN HYSOON MACHINERY CO.,LTD
	NO,6 LINGSHAN ST.TAIAN,SHANDONG,CHINA
Distributor's Address	

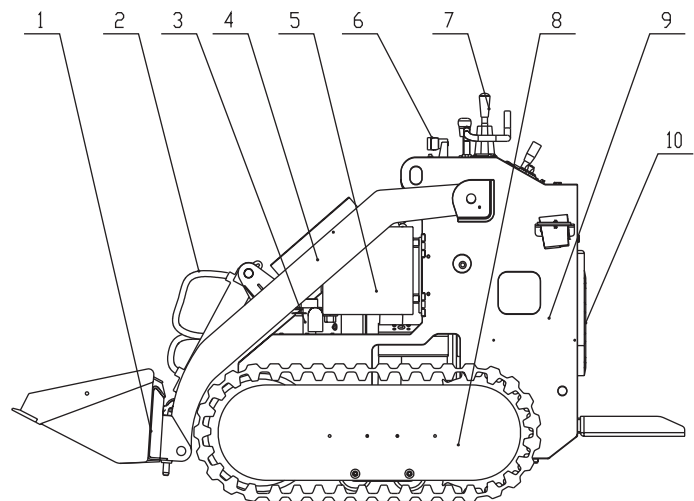
## 2. INTENDED USE

HY280, a mini skid steer loader, is designed to work in limited space. The quick connectors let the switches of various attachments become very easy. HY280 can work in normal temperature environment, especially perform better in narrow streets or narrow, low space, like small-sized construction site, yard tidying, garden landscaping, planting in the farm and carrying. Please contact the dealer, if HY280 is used to work under extreme temperature. HY280's use in any other way is considered contrary to the intended use.

HY280 should be operated, serviced and repaired by the ones who are familiar with their particular characteristics and acquainted with the relevant safety procedures.

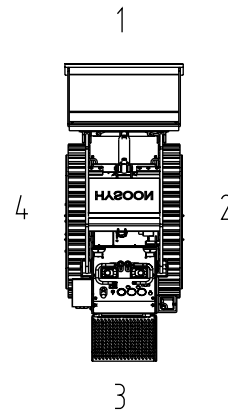
## 3. MACHINE COMPONENTS

- 1). Attachment Coupler And Bucket Assy
- 2). Hydraulic Hoses & Connecters Assy
- 3). Fuel Tank Assy
- 4). Lift Arms Assy
- 5). Radiator Assy
- 6). Electric System
- 7). Operation System
- 8). Transmission Assy
- 9). Bodywork Assy
- 10). Power System Assy



## 4. OPERATOR ORIENTATION

- 1). Machine front
- 2). Machine right
- 3). Machine rear
- 4). Machine left



## 5. SAFE RULES




**Warning**

*The guidelines must be complied with before operation and maintenance. Please read the manual and icons on the unit. The operating instruction and warning must be followed when repairing, adjusting and maintaining. After that, please confirm whether it can work properly. Operation against the guidelines will get you hurt.*

### Operator's Obligations

Most of the accidents are due to the operators' operations against the instructions. Your careful consciousness of danger will avoid accidents. The basic knowledge regarding operation and precaution under dangerous circumstances is as follows:

 *Indicates that your safety should be taken into consideration before operating HY280*



**Warning**

*The operator must understand and follow the following the operation instruction.*

- You have to know each item of the operating instructions and follow the relevant regulations.

 **Warning**

*All the warnings are just for the sake of your safety.*

- Refilling gasoline and hydraulic oil against the proper operation will result in danger, even fatal injury.
- Operating, maintaining, refilling and lubricating cannot be conducted before you read the manual well enough.



*The icons remind you to be careful all the time, otherwise the operator's and bystander's lives will be threatened. The icons on the machine keep you knowing danger is around at any time. All the warnings on the machine and in the manual contain the icons. You are required to realize something dangerous and avoid accidents.*

Each component has been tested and inspected before the equipment is transferred to the user. After purchasing, the 1<sup>st</sup> previous 100-hour careful operation

- Warm up the unit for 5 minutes after starting.
- The full-speed Operation is avoided.
- Try to avoid rapid starting, speeding, unnecessary stopping and rapid turning.
- Clean the dust and debris on the filter when you change the components of it.
- Check the potential hazards when the working environment is bad.
- Check the working time on the hour meter.

Working with rubber track on the gravel, stone road and steps, etc is prohibited, or the patterns of the track will be damaged. The operator must be careful when operating the machine on the rough and uneven road. The wheels may be off.



**Danger**



**Warning**



**Importance**

The icons have something important to do with safety regarding the machine and the operator.



**Warning**

*Warnings on the machine and in the manual must be followed out of your safety, or death or serious will be resulted in*



**Danger**

*The icon indicates the danger is around the operator and the machine, operation against them could result in death or serious injury.*



**Importance**

*The icon must be followed to avoid damaging the machine.*

## **Safety Warning**

The meanings as follows

“Notice”

“Warning”

“Involving Safety”.

These icons indicate the important information about safety. The icons tell the possibilities of death and injury. You are required to follow the under-mentioned instructions.



## 6. OPERATION GUIDE

### New Loader

About 100-hour break-in will make your machine perform well. The new machine should be operated according to the following steps. Overusing should be avoided within first 100 hours.

Hours	Loading Capacity
Within 10 hours	About 60%
Within 100 hours	About 80%
100 hours later	100%

It must be used carefully within the previous 100 hours.

### Preparations Prior to Operation

Read the manual before operation

### Daily Inspection

The following daily inspection enables the engine run well.

- The cooling system of the engine
- Tyres and type pressure(for model)
- Loosening and breakage
- Safety icons
- Dashboard
  - Cooling oil ,engine oil, and hydraulic oil level and leakage
  - Regular inspection for lubricating oil and refilling
  - Examine instruments and indicators in operation
  - Inspection for whether the machine works properly or not.
  - Lubricating oil should be put into the points
  - Tighten bolts



**Warning**

*Overusing will decrease its function and service life.*



**Warning**

*The operator must be trained professionally before running the machine or death or serious may be caused.*



**Warning**

*To avoid death or injury, operation requires you to keep yourself standing on the platform.*

## Safety Operation

**Notice!** *The stability needs under run the loader.*

The barycenter will change when lifting and lowering something, sudden turning and running on a slope should be avoided when lifting the load.

When turning and running, the lift arm should be kept lower, you are strongly suggested to load, unload and steer on the flat ground.

When running, keep the lift arm in place; simultaneously retract the bucket enough to keep away from the barriers

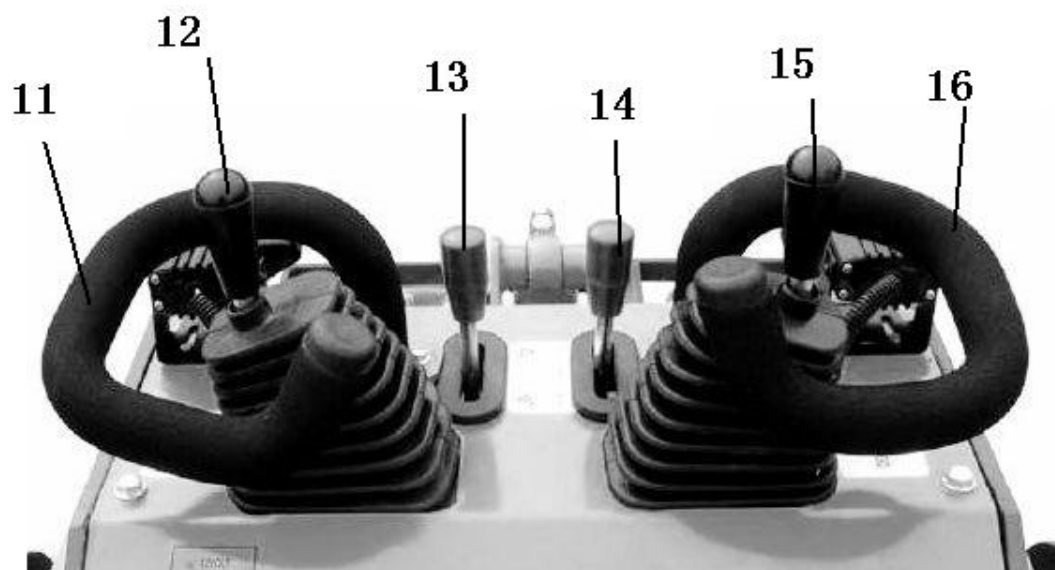
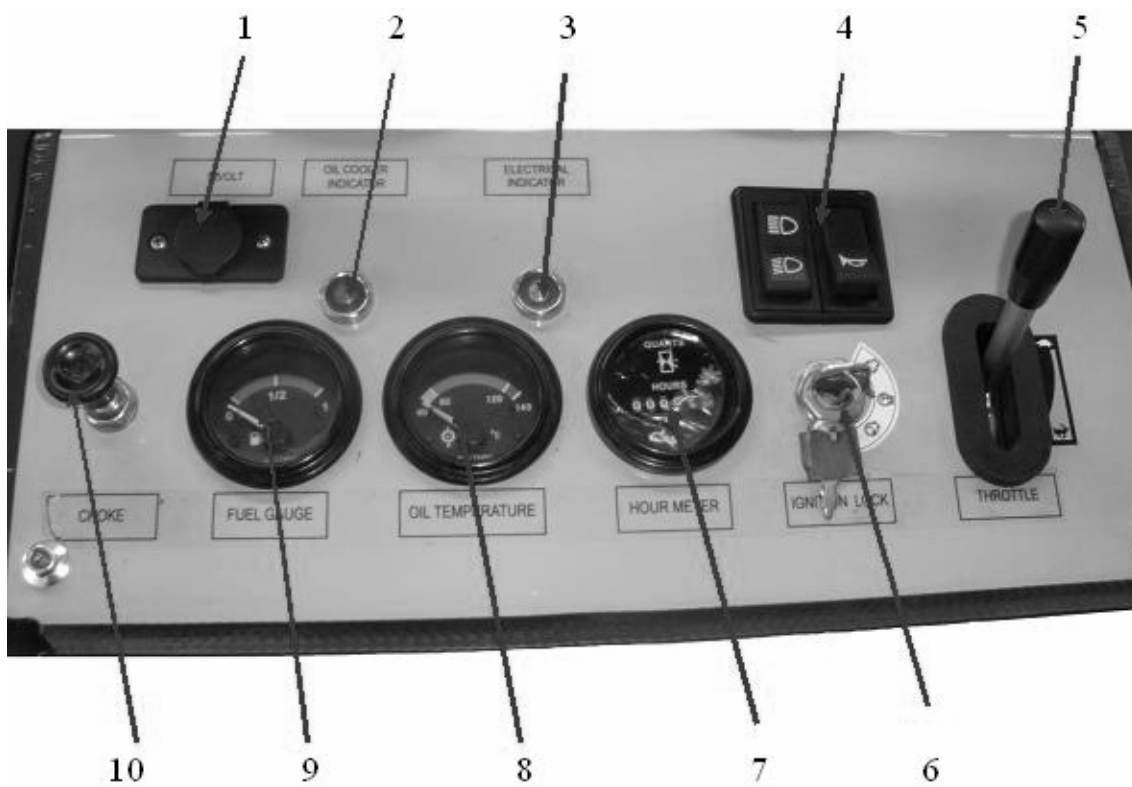


*To turn or speed when lift arms are being raised, can result in a rollover, injury or death, operate carefully.*



*Rough operation is prohibited. The loader should be turned gradually at a low speed. The rapid turning on the concrete ground can cause the wheels off or wear the pattern.*

## 7. CONTROLS





1	Power Outlet	2	Radiator Fan Indicator	3	Power Indicator
4	Duplex Rocker Switch	5	Throttle	6	Ignition Switch
7	Hour Meter	8	Hydraulic Oil Temperature Meter	9	Fuel Gauge
10	Choke	11	Left Handhold	12	Left Handle
13	Attachment Left Control	14	Attachment Right Control	15	Right Handle
16	Right Handhold	17	Power Source Switch	18	Tool Box (Optional)

## 7.1 Power Outlet



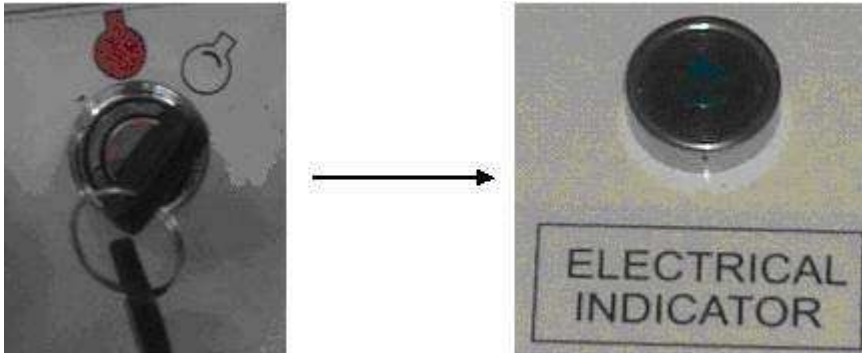
Uncover it, the power outlet will supply electricity with a plug if necessary.

## 7.2 Radiator Fan Indicator



When the temperature of hydraulic oil is up to 70°C, the indicator shine & the fan will begin work automatically. The indicator is off indicates that the fan is off or the electric motor of the radiator fan doesn't work properly.

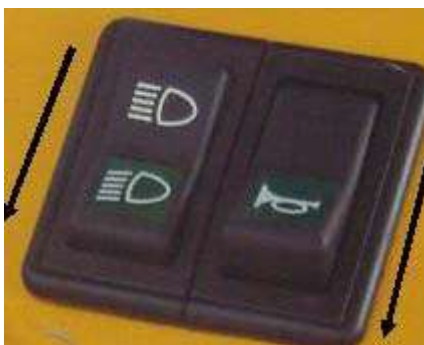
### 7.3 Power Indicator



When the Ignition Switch is turned clockwise to the position the power indicator will be on and the hour meters begin work.



### 7.4 Duplex Rocker Switch



Left switch control the front lights & the right control the horn. Press the left one as shown by the arrow to turn on the front lights, otherwise the front lights off.

Press the right as shown by the arrow to whistle, or off

### 7.5 Hand Throttle

**Ball handle:** Forward → slow down

Backward ← speed up






To decrease the engine speed, push the hand throttle.

To increase the engine speed, pull the hand throttle.

## 7.6 Ignition Switch



Turn the key to the position  to extinguish the engine. Turn the key clockwise to the position , the switch on. The key is turned clockwise to the position  to start the engine.

If the engine cannot be started in cold weather, check the choke is open or not.

If you fail to start the engine again, please check if the handle is in correct position.



*If the engine cannot be started or extinguished, turn the key counterclockwise to “STOP” as indicated. Restart the engine after 10-15 seconds.*

## 7.7 Hour Meter



The hour meter records the engine working time.

## 7.8 Hydraulic Oil Temperature Gauge



It indicates the hydraulic oil temperature. When the oil temperature is up to 70°C, oil cooler indicator will be shine and the fan in the radiator work automatically to cool the hydraulic oil.

## 7.9 Fuel Gauge



It indicates the fuel level in the fuel tank, the indication "0" means the fuel left will support the engine work for 1-2 hours.

## 7.10 Choke Switch



If you can not start the engine in cold weather, pull the switch as shown. Then start the engine. Press the choke button back as shown after starting the engine.

## 7.11 Right Handhold

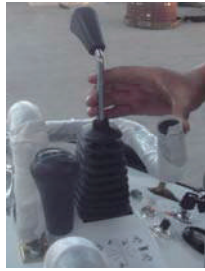
When operate the right handle, keep the right hand on the right handhold.



**Warning:** *Don't leave your right hand away the handhold when the equipment was driving.*



**Forward**



**Neutral**



**Backward**



**Leftward**



**Rightward**

**Forward**↑: Place your right hand as shown, push slightly to let the right wheel forward.

**Backward**↓: Place your right hand as shown, let the right wheel backward, and pull slightly.

**Leftward**←: Place your right hand as shown, move slightly the right handle in the left direction to raise the lift arm.

**Rightward**→: Place your right hand as shown, move the right control slightly in the right direction to lower the lift arm.

## 7.12 Right Handle

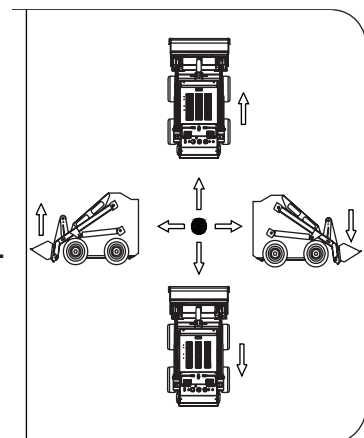
↑**Forward**: To make the right wheels forward

↓**Backward**: To make the right wheels backward.

→**Rightward**: To lower the lift arms.

←**Leftward**: To raise the lift arms.

▲ The rated capacity cannot be exceeded when raising the lift arm with heavy load.







**Warning:** *When the lift arms are raised up, driving is prohibited; otherwise serious injury or death can be caused.*

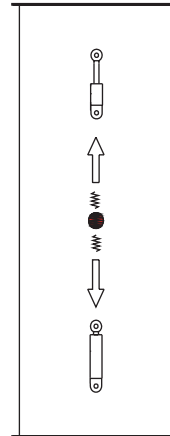
## 7.13 Attachment Right Control



↑ **Forward:** To rotate the attachment motor normally.

↓ **Backward:** To rotate the motor reversely

● **Middle:** To relieve the pressure of hydraulic oil in hydraulic system.



**Warning:** *Do not attach or remove the hydraulic attachments unless the attachment handle is on idle position and the hydraulic pressure is relieved. Avoid hurt from the oil with high pressure and temperature.*

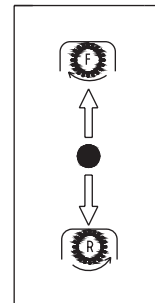
## Attachment Left Control



↑ **Forward:** To rotate the attachment motor normally.

↓ **Backward:** To rotate the motor reversely

● **Middle:** To relieve the pressure of hydraulic oil in hydraulic system.



**Warning:** *Do not attach or remove the hydraulic attachments unless the attachment handle is on idle position and the hydraulic pressure is relieved. Avoid hurt from the oil with high pressure and temperature.*

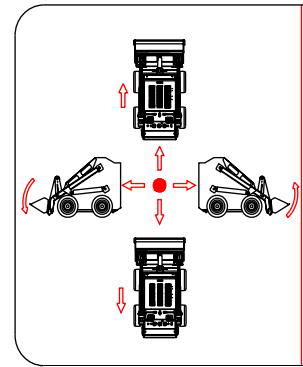
## 7.14 Left Handle

↑ **Forward:** To move the left wheels forward

↓ **Backward:** To move the left wheels backward.

→ **Rightward:** To retract the bucket for loading.

← **Leftward:** To turn the bucket for dumping.



## 7.15 Left Handhold

Keep the left hand on the left handhold while operating the left handle.



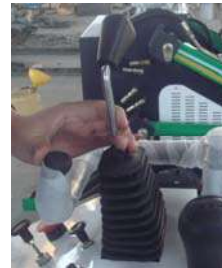
**Warning:** *Don't leave your left hand away the left handhold when the equipment goes normally.*



Forward



Neutral



Backward



Leftward



Rightward

**Forward**↑: Push the left handle slightly forward with left hand as shown in the pictures, the left wheel will move forward.

**Backward**↓: Pull the left handle slightly backward with the left hand as shown in the pictures, the left wheel will move backward.

**Leftward**←: Move the left handle in left direction slightly as shown in the

pictures to dump the bucket.

**Rightward**→: Move the left handle in right direction slightly as shown in the pictures to curls the bucket for loading.

## 7.16 Power Source Switch



Screw in



Power on



Screw out.



Power off



**Notice:** *Keep power off and cover the point after stopping the engine.*



**Notice:** *Keep power on before the machine beginning work.*

## 7.17 Toolbox(Optional)



Take toolbox down to read the manual when meeting difficulties in operation.

## **8. PREPARE BEFORE WORKING**

### **8.1 Brief**

Success arises from the successful beginning. The First step of the working plan requires reviewing all the information on job and jobsite.

### **8.2 All Work.**

#### **8.2.1 Review Working Plan.**

Review the plan and the like; inspect the current or planned structure, altitude and the information on what is proposed what may happen.

#### **8.2.2 Traffic Control**

On the roads or other traffic areas, please contact the concerned authorities.

#### **8.2.3 Emergency Service**

The telephone numbers regarding the accident management and emergency service organization are available or not, confirm them.

#### **8.2.4 Ground-Penetrating Jobs**

##### **Notify One-Call Services**

Call area One-Call or similar services and have existing lines located and marked. Call any utilities in your area that do not subscribe to One-Call.

#### **8.2.5 Above-Ground Jobs**

##### **Locate Overhead Lines**

Note location and height of all overhead lines in jobsite and ensure that fully lifted attachment and/or load will not touch lines.

#### **8.2.6 Inspect Site**

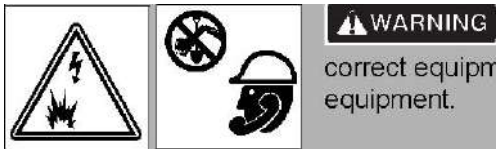
Inspect jobsite before transporting equipment. Check for the following:

- Changes in elevation such as hills or other open trenches
- Obstacles such as buildings, railroad crossings, or streams
- Signs of utilities (See “Inspect Jobsite” on page 26.)

- Traffic
- Access
- Soil type and condition

## 8.2.7 Identify Hazards

Identify safety hazards and classify jobsite if attachment will penetrate ground. See “Classify Jobsite” on page 26.



*Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety.*

### Notice:

1. *Wear personal protective equipment including hard hat, safety eye wear, and hearing protection.*
2. *Do not wear jewelry or loose clothing.*
3. *Notify One-Call and companies which do not subscribe to One-Call.*
4. *Comply with all utility notification regulations before digging or drilling.*
5. *Verify location of previously marked underground hazards.*
6. *Mark jobsite clearly and keep spectators away.*
7. *Remember, jobsite is classified by hazards in place -- not by line being installed*

## 8.3 Classify Jobsite

### 8.3.1 Inspect Jobsite

Inspect jobsite and perimeter for evidence of underground hazards, such as:

- “buried utility” notices
- utility facilities without overhead lines
- gas or water meters
- junction boxes
- drop boxes

- light poles
- manhole covers
- sunken ground
- Follow U.S. Department of Labor regulations on excavating and trenching (Part 1926, Subpart P) and other similar regulations.
- Contact One-Call (888-258-0808) and any utility companies which do not subscribe to One-Call.
- Have an experienced locating equipment operator sweep area within 20' (6 m) to each side of work path. Verify previously marked line and cable locations.
- Mark location of all buried utilities and obstructions.
- Classify jobsite.

### 8.3.2 Select a Classification

Jobsites are classified according to underground hazards present.

If working . . .	Then classify jobsite as . . .
Within 10' (3 m) of a buried electric line	Electric
Within 10' (3 m) of a natural gas line	Natural gas
In sand, granite, or concrete which is capable of producing crystalline silica (quartz) dust	Crystalline silica (quartz) dust
Within 10' (3 m) of any other hazard	Others

**Notice:** *If you have any doubt about jobsite classification, or if jobsite might contain unmarked hazards, take steps outlined previously to identify hazards and classify jobsite before working.*

### 8.3.3 Apply Precautions

Once classified, precautions appropriate for jobsite must be taken.

#### Electric Jobsite Precautions

Use one or both of these methods.

Expose line by careful hand digging or soft excavation.

Have service shut down while work is in progress. Have electric

company test lines before returning them to service.

### **Natural Gas Jobsite Precautions**

In addition to positioning equipment upwind from gas lines, use one or both of these methods.

Expose lines by careful hand digging or soft excavation.

Have gas shut off while work is in progress. Have gas company test lines before returning them to service.

### **Crystalline Silica (Quartz) Dust Precautions**

Follow OSHA or other guidelines for exposure to crystalline silica when trenching, sawing or drilling through material that might produce dust containing crystalline silica (quartz).

### **Other Jobsite Precautions**

You may need to use different methods to safely avoid other underground hazards. Talk with those knowledgeable about hazards present at each site to determine which precautions should be taken or if job should be attempted.

## **8.4 Check Supplies and Equipments**

### **8.4.1 Supplies**

- Fuel
- Keys
- Lubricants
- Personal protective equipment, such as hard hat and safety glasses

### **8.4.2 Fluid Levels**

- Fuel
- Hydraulic fluid
- Battery charge
- Engine oil

### **8.4.3 Conditions and Functions**

- Filter (air, fuel, hydraulic oil)

- Tyres or track
- Hydraulic pump and motor
- Hose and valve
- Sticker, warning, safety shields

#### 8.4.4 Accessories

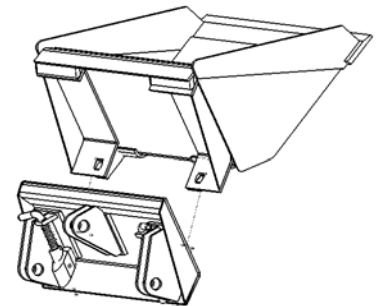
If required, mount a fire extinguisher near the power unit but away from possible points of ignition. The fire extinguisher should always be classified for both oil and electric fires. It should meet legal and regulatory

## 9. CONNECT ATTACHMENT

**Important:** *Use only Hysoon-approved attachments, attachments can change the stability and operating characteristics of the unit.*

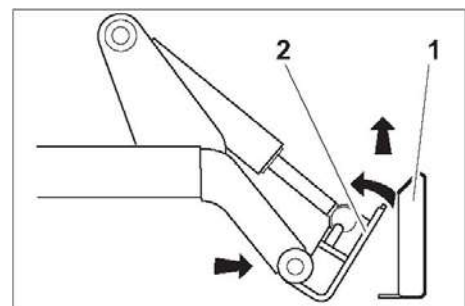
### Attachments

**Important:** *Before connecting the attachments to the unit, ensure that the mount and receiver plates free of dirt and debris.*



1. Ensure that the lock pin handle as shown on the mount plate are turned away from the centre of attachment.
2. Start the engine
3. Tilt the coupler forward.
4. Position the mount plate on the upper of the receiver plate on the attachment.
5. Raise the lift arms, while tilting the mount plate.

**Important:** *Raise the attachment enough to clear the ground. The mount plate should be fully tilted back.*



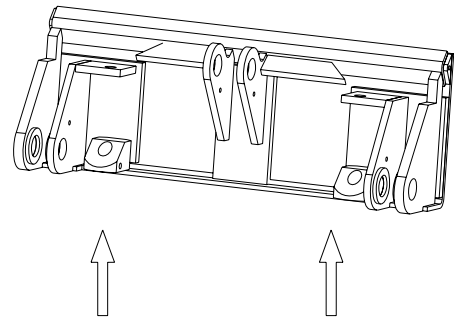
1. The above-mentioned operation must be conducted with all controls



in neutral positions.

2. Turn off the ignition and remove the key.
3. Turn the lock handle to ensure the attachment installed completely.

**Notice!** *Ensure the connection proper; verify that the bottoms of the lock pins are visible under the attachment receiver plate as shown.*



## Hydraulic Hoses

If the attachment needs to be operated with hydraulic hoses, connect hydraulic hose.



**Warning:** *The fluid or air pressure could pierce skin and injury or death, stay away.*

### Notice:

1. *Escaping pressurized fluid can cause injury, pierce skin or poison.*
2. *Before disconnecting hydraulic hoses, stop the engine to relieve the operating pressure .Lower, fasten or prop up hoisting parts. Cover the connecting with thick rag and loosen the connecting nut slightly to relieve remaining pressure. Collect all the fluid in a container.*
3. *Before using the hydraulic system, confirm all the connections are tight and the hoses are undamaged.*
4. *Fluid leaks can be hard to detect. Use a piece of cardboard or wood, rather than hands, to search for leaks.*
5. *Wear protective clothing, including gloves and eye protection.*
6. *If you are injured, seek immediate medical attention from a doctor familiar with this type of injury.*



**CAUTION**

**Caution:** *Hot parts may cause burns. Do not touch until cool.*

**Notice:** *the hot components cannot be touched before cooling. Hydraulic connectors, hoses and fluid are quite hot, connecting and disconnect hydraulic hoses needs to wear gloves. Don't touch the hydraulic components before cooling.*



1. Cycle attachment drives control to relieve the remaining pressure in the hoses.
2. All the operations must be conducted while all controls are in neutral position.
3. Remove dirt and debris from hydraulic on the hydraulic connects.
4. Connect male coupler on attachment to female coupler on the unit.
5. Connect female coupler on attachment to male coupler on the unit
6. Connect female coupler on case drain hose to case drain coupler on unit, if attachment requires it.
7. Ensure that connections are secure by pulling on hoses.

## **10. DRIVE**

### **10.1 Start Engine**

- 10.1.1 Ensure all controls are in neutral.
- 10.1.2 If necessary, choke cold engine.
- 10.1.3 Move throttle to half open.

10.1.4 Turn ignition switch to start position and release when engine starts.

10.1.5 Push in choke after engine is warm

**Emergency shutdown:** Turn the ignition switch to STOP.

## 10.2 General Operation

10.2.1 Pull lift arm control to raise mount plate and attachment off ground

2.2 Move both side wheel drive controls to forward or reverse

10.2.2 Adjust the throttle as needed.

## 10.3 Slope Operation Guideline

10.3.1 **Notice:** *Operating on a slope requires you to keep the attachments and the load low, to drive slowly and to look out all the time.*

10.3.2 Operating up and down on a slope with a load needs that the weight distribution should be changed with the weight of the attachment and the load. For example, an empty bucket makes the rear of the unit down be the heavier end, a full bucket makes the front down be the heavier. The most of the attachments approved by HYSOON make the front be the heavier.

10.3.3 To start, stop and turn on a slope should be avoided. If turning is needed, make the heavier end of the unit uphill.

10.3.4 Before lower the attachments completely, do not stop the engine , keep all the controls in neutral, turn the ignition switch to “STOP”.

## 10.4 Shut Down

10.4.1 Lower lift arms to ground

10.4.2 Move all controls to neutral position

10.4.3 Run engine at low idle for three minutes to cool

10.4.4 Turn ignition switch to STOP

10.4.5 Remove key

**Notice:** Don't park the unit on a slope unless the parking brake is adopted.

*Move all controls to neutral position when stopped*



*On a slope, lean angle of fuel must be less than 12°, or fuel will overflow.*

## 11. EQUIPMENT STORAGE

### 11.1 Rinse the Equipment



11.1.1 Spray water onto the equipment to remove dirt and mud, especially on the undercarriage.

**Notice:** *Don't spray water onto operator's console. Electrical components can be damaged. Wipe it instead.*

11.1.2 Open the hood and remove debris from inside of the unit.

11.1.3 Remove mud from on the tires.

11.1.4 If the track is equipped and will not be used for a long time, the unit should be kept indoors. Remove mud/debris and don't expose it in the sun and the rain. The temperature should be between -25°C and 55°C.

### 11.2 Disconnect Attachment

11.2.1 Lower the attachment to the ground.

11.2.2 Ensure that all controls are in neutral.

11.2.3 Turn off the engine.

11.2.4 Disengage lock pins by turning handles away from the centre of the attachments.

11.2.5 Cycle the attachment drive control and disconnect hydraulic

hoses, if used.

11.2.6 Disengage the parking brake.

11.2.7 Start the engine.


11.2.8 Tilt the mount plate forward; withdraw the unit away from the attachments.

### 11.3 Stow Tools

11.3.1 Confirm all tools and accessories are loaded on the trailer.

## 12. SAFETY PRECAUTION AND MAINTENANCE

### 12.1 Safety Precaution

12.1.1  **WARNING** *Incorrect procedures could result in death, injury and property damage. Learn to use the equipment correctly.*

#### Notice:

1. *Unless other instructed, all service should be performed with the engine off.*
2. *Stop the engine before opening the hood for inspection or service.*
3. *Cool the engine before performing any service.*
4. *Refer to engine manufacturer's manual for engine maintenance instructions.*
5. *Before maintenance, lower attachments to the ground.*

#### 12.1.2 Working Under Raised Lift Arms



**Notice:** *Stay away before working under raised lift arms.*



**WARNING**

**Warning:** *Possible explosion, serious injury or equipment damage could occur. Follow the under-mentioned carefully.*

**Notice:**

- 1. Sparks can cause battery to explode.*
- 2. Electrical components can be damaged easily.*

## 12.2 Maintenance

### 12.2.1 Lubrication



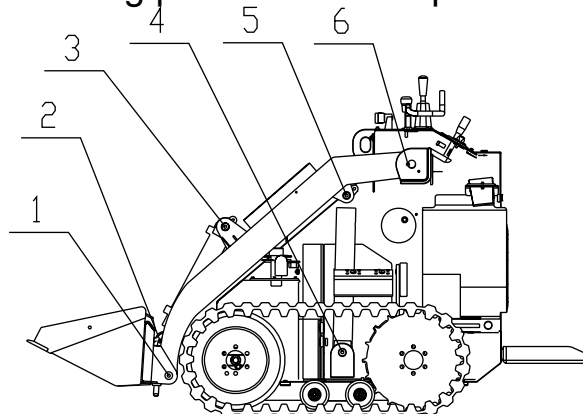
The proper lubrication and maintenance can protect your machine from damage. Service intervals listed are for minimum requirements. In extreme conditions, service machine more frequently. Use only recommended lubricants

**Notice:**

- 1. Use genuine HYSOON parts, filters and approved lubricants to maintain warranty.*
- 2. Use the SERVICE RECORDER to record all service needed to your machine.*

### Lubricating Position

Lubricate the following position before operation:



To avoid pollution, remove dust on the connecting components before

lubrications.

Replace lost or damaged components in time.

To avoid lubricating unconscionably, remove dust regularly.

### **Chain Lubrication (with Tires)**

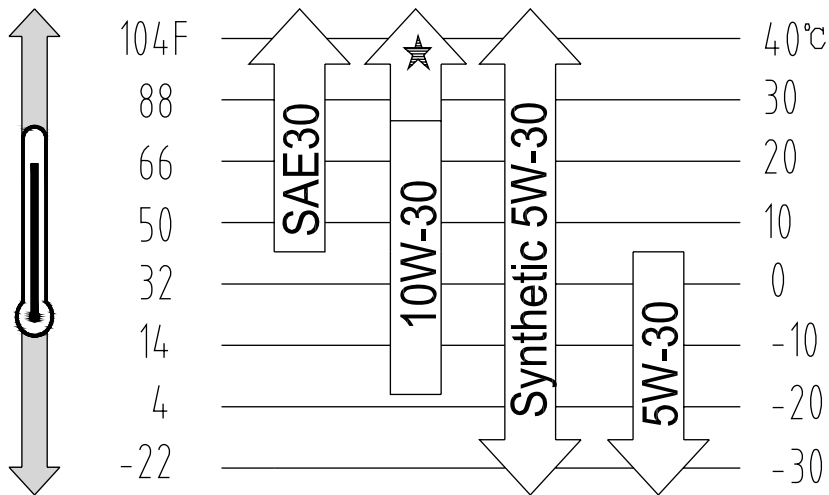
Lubricate periodically in the gaps between Internal and external chain plate along drive side of the chain. If in extreme conditions, when oil lubrication is impossible, lubricate with grease.

### **Track Maintenance**

- Friction between rubber track and hard things (like concrete, etc) should be avoided, when driving. That will cause cracks along track edge.
- Track should be avoided to touch fuel or hydraulic oil. Once tracks touch oil, wipe off oil, otherwise that will damage track. Touching salt or salt fog should also be avoided. It will influence joint among rubber, metal and force layer. Once rubber tracks touch salt and the like, wash it well.
- If rubber track will not be used for a long time, keep it indoors, remove mud and debris, and don't expose it in the sun *and rain*.  
*Rubber should be used and kept between -25 °C and 55 °C*

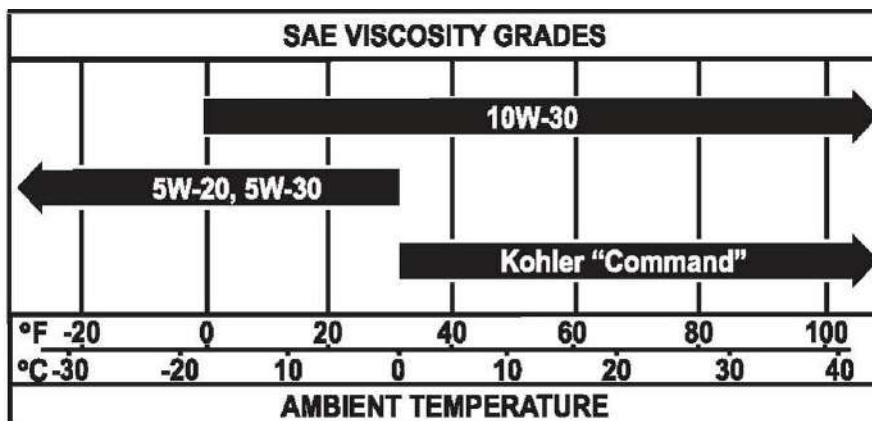
## **12.2.2 Maintenance**

### **Briggs & Stratton Engine Oil Temperature Chart**



For more information on lubrication and maintenance, please see operator's manual.

### Kohler Engine Oil Temperature Chart



t17om010h.eps

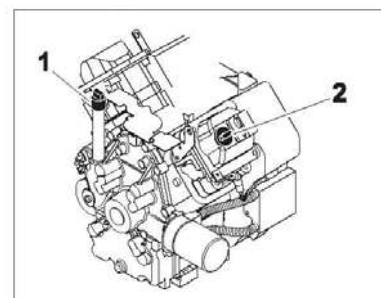
Temperature range anticipated before next oil change

For more information on lubrication and maintenance, please see operator's manual.

## 10 HOUR

### Check Engine Oil Level

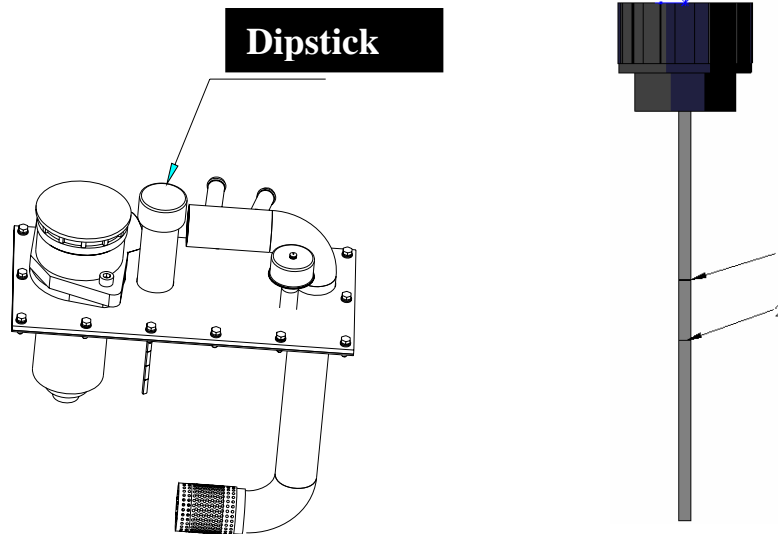
Check engine oil level at Dipstick, Oil level should be at top of the marking every 10 hours. If low, add 10W30. Check with unit on level surface and at least 15 minutes after stopping engine.





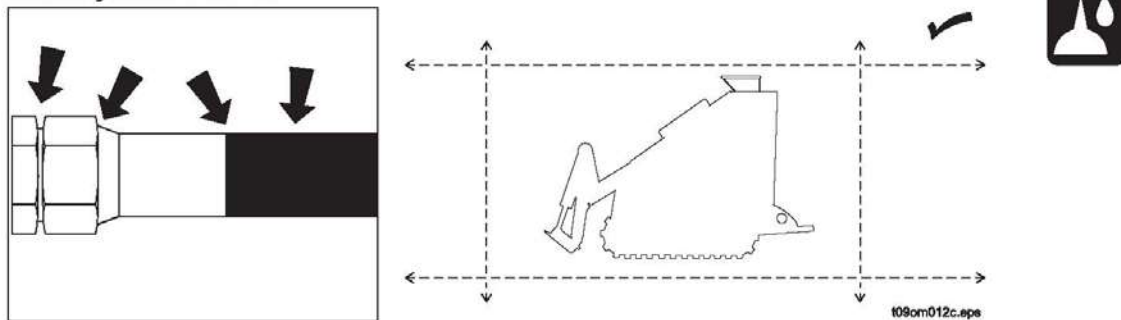
**Important:** Use oil specified in “Engine Oil Temperature Chart”

## Check Hydraulic Fluid Level



Check hydraulic fluid level every 10 hours. Keep fluid level between marking of 1 and 2 on the dipstick after engine is off and fluid is cool. If low, add hydraulic fluid up to “1”.

## Check Hydraulic Hoses



Check hydraulic hoses for leaks every 10 hours.



**Warning:** Fluid or air pressure could pierce skin and cause injury or death, stay away.

## Notice:

1. Escaping pressurized fluid can cause injury, pierce shin and poison.
2. Before disconnecting a hydraulic line, turn engine off and operate all controls to relieve pressure. Lower, block, or support any raised component with a hoist. Cover connection with heavy cloth and

*loosen connector nut slightly to relieve residual pressure. Catch all fluid in a container.*

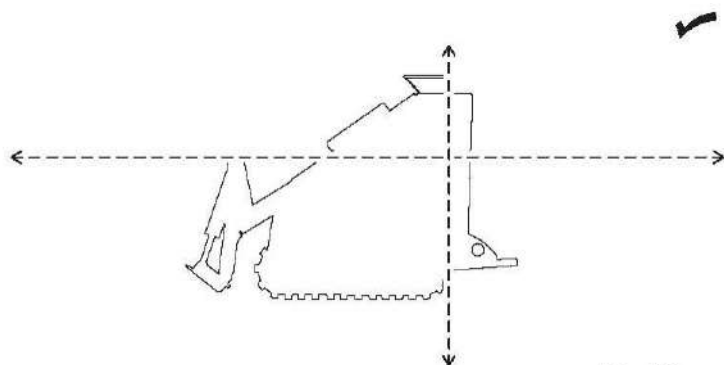
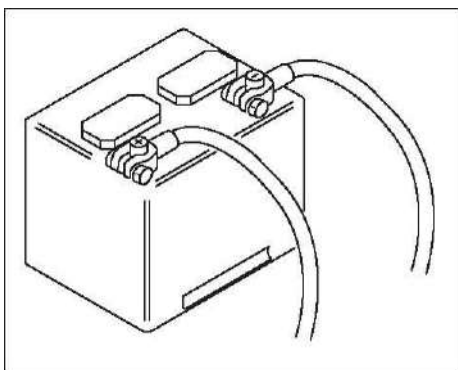
3. *Before using system, check that all connections are tight and all lines are undamaged.*
4. *Fluid leaks can be hard to detect. Use a piece of cardboard or wood, rather than hands, to search.*
5. *Wear protective clothing, including gloves and eye protection.*
6. *If you are injured, seek immediate medical attention from a doctor familiar with this type of injury.*

## 50 HOUR



Location	Task	Remark
<b>Traction</b>	Check battery	
	Check drive belt	
	Check fuel filter	
	Check oil temperature	
	check hydraulic filter	

## Battery Maintenance



t17om016h.eps

### A. Ordinary Batteries:

After operating for 10-15 days in winter or 5-6days, battery electrolyte should be checked. Disconnect battery, loosen the ventilation plug and check electrolyte in each unit. If the level is low, refill them with distilled water.

### **Free Maintenance Battery:**

Check battery every 50 hours. Keep battery and terminals clean and free of corrosion. Check hole-shaped hydrometer. The colour of hydrometer will change with the proportion of battery electrolyte. The hydrometer can indicate the state of electricity storage and electrolyte level. Blue means electricity is enough and battery is in good condition. Light blue or black means that battery needs charging. That the indicating point becomes light yellow means there is malfunction inside battery. The battery needs repairing replacing.

### **B. Battery Storage and Installation:**

Battery should be stored where is cool and ventilate, not be exposed in the sun and free of dump. Installation of battery should not be knocked with metal tool. Don't put metal tools on batteries.

### **C. Battery Installation and Uninstallation:**

Stop engine and remove the ignition key. Remove negative battery cable first, and then remove positive cable. Loosen retaining bolt, take battery down. Check battery terminals. Installation of battery is just the reverse.

**Notice:** *Never misconnect the positive and negative.*

### **D. Notice on Battery Operation:**

- 1) When operating battery, wear protective tools (safety glasses, rubber gloves etc)
- 2) Battery operation must be careful, because there is sulfuric acid inside.
- 3) Once skin and clothes are spattered with sulfuric acid, must be washed immediately, or injury or death may be resulted in.
- 4) Keep battery away from fire and heat source.
- 5) Battery is only used to start engine. Other use may damage battery. Fire can be caused by hydrogen from battery.

## E. Battery use in winter:

### 1) Common battery:

Sometime start engine may need higher voltage and stronger current, especially in winter, which is more different than others. Electrolyte leakage caused by low temperature will decrease battery supplying capacity. It is the reason that it is more difficult in winter to start engine than in summer

### 2) Avoid electricity leakage.

The first failure to start engine will make restart done in one minute, because voltage needs collecting.

**Notice:** *To check and maintain the battery cables specially in winter.*



#### WARNING

Explosion possible. Serious injury or equipment damage could occur. Follow directions carefully.

#### NOTICE:

- Battery gas can explode. Keep sparks and flames away from battery.
- Always remove negative (-) battery cable first and replace it last.
- Battery electrolyte is sulfuric acid and poisonous. Will burn skin and cause blindness if splashed into eyes. Wash hands after working around battery.
- Never disconnect battery terminals with engine running. Voltage spike may occur and ruin electronic control modules or other components.

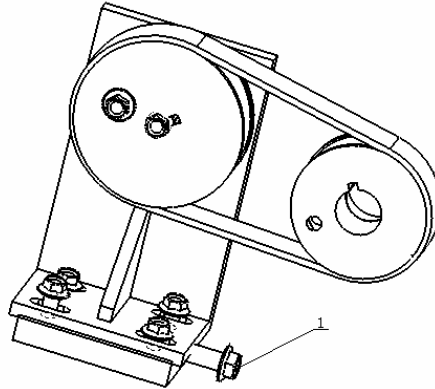
## Check Chain or Track



1

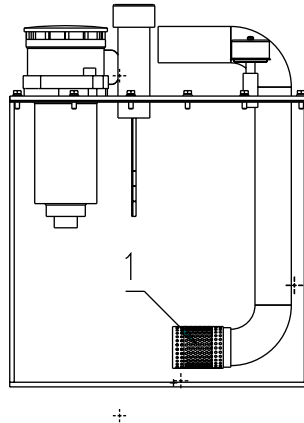
Check track or chain every 50 hours. Adjust tension of track/chain if necessary with 1 component as shown. Replace if cracked, stretched or badly worn.

### Check Drive Belt



Check drive belt every 50 hours. Adjust belt tension if necessary with 1 component as shown. Replace if cracked, stretched, or badly used.

### Check Air Filter

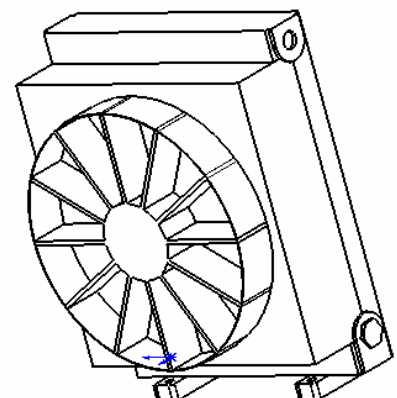


Check air filter for wear or holes every 50 hours. Replace if necessary

### Clean Oil Cooler

Clean oil cooler every 50 hours. Clean more frequently if operating in dusty conditions. Clean with compressed air or low pressure water.

**NOTICE:** *Be careful not to damage cooler fins.*



## Change Hydraulic Fluid (Break In Only)

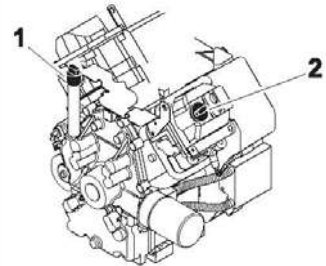
Change hydraulic fluid at 50 hours for break in process, and then change every 250 hours.

## 100 HOUR

### Change Engine Oil

Change engine oil every 100 hours.

Drain oil at drain plug (1) and add GEO 10W 30 at filler (2) until oil level is seen at marking



## 200 HOUR

Check spark plug and gap (see engine operator's manual for instructions.)

### Change Oil Filter.

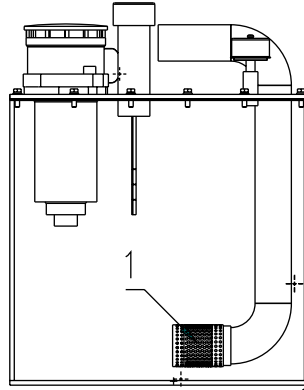
Change oil filters every 200 hours.



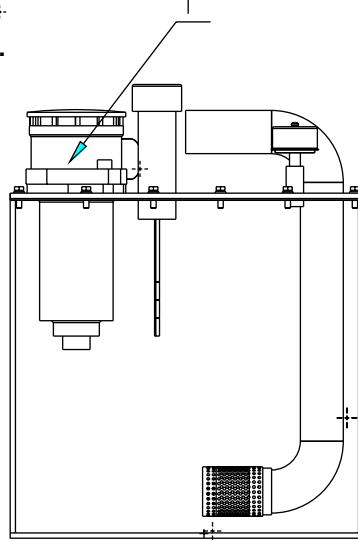
## 250 HOUR

Location	Task	Remarks
Traction	Change hydraulic fluid filter, return oil filter	
	Change air filter, check inner elements.	

## Change Hydraulic Fluid Filter



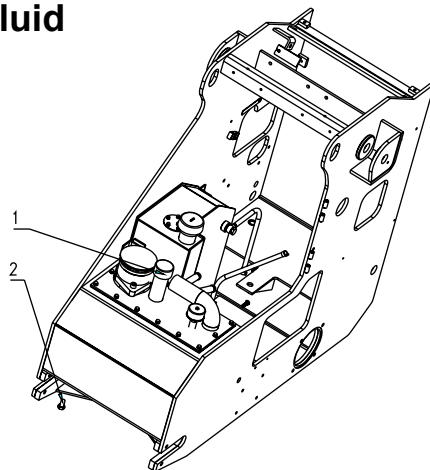
Change return oil filter every 250 hours.



## 500 HOUR

Location	Task	Remarks
Traction	Change hydraulic fluid	

## Change Hydraulic Fluid



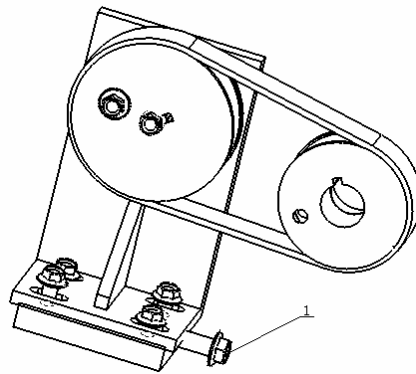
Change hydraulic fluid every 500 hours. Drain fluid at drain plug(2), add at fill (1) till fluid level is between 1<sup>st</sup> and 2<sup>nd</sup> marking line(up→down), then start the engine, keep the engine run for 2mins. check the marking, re-fill

hydraulic oil until fluid level is between 1<sup>st</sup> and 2<sup>nd</sup> marking line(up→down).

### As needed

Location	Task	Remark
Traction unit	Change drive belts	
	Jump start	
	Chain or track	

### Change Drive Belt



Change drive belt as needed when worn or damaged.



**Caution:** *Hot parts may cause burning. Do not touch until cool.*

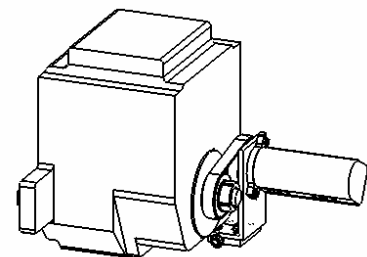
**Notice:** *Allow engine to cool before touching and performing any service.*

1. *Stop engine and allow engine to cool before attempting.*
2. *Remove key from ignition Switch.*
3. *Adjust belt tension.*



**Warning:** *Moving parts could cut off hand or foot. Stay away.*

**Notice:** *Don't open the hood for inspection or service with engine running.*



**Warning:** *Runaway possible. Machine could run over you or*



*others. Learn to use all controls. Start and operate only from the operator's position.*

**Notice:** *Don't leave operator station when engine running.*

- 1. Start engine and check operation*
- 2. Stop engine, open hood, re-check belt.*
- 3. Close hood*

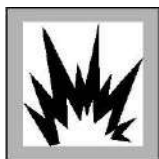
## **Jump Start Unit**



**Warning:** *Incorrect procedure could result in death, injury or property damage. Use equipment correctly.*

**Notice:**

- 1. Park on level area.*
- 2. Keep all drive controls in neutral.*
- 3. Lower all unstowed attachments*
- 4. Turn all electrical loads*
- 5. Stop engine and remove the key*
- 6. Block wheels or tracks.*
- 7. Explosion possible, could result in serious injury or damage apparatus*



**WARNING** Explosion  
Follow directions carefully.

**Warning:** *Explosion possible. Serious injury or death could occur. Follow directions carefully.*

**Notice:**

- 1. Lead-acid batteries vent explosive hydrogen gas when charged*
- 2. Don't smoke, create sparks, or use flames around batteries.*
- 3. Never lean over batteries when making connections.*
- 4. Do not allow vehicles to move to touch when jumping starting.*
- 5. Wear eye protection and remove metal jewelry and watches.*
- 6. Do not attempt to jump start a batteries that is leaking, bulging,*

*heavily corroded, frozen, otherwise damaged.*

7. *NEVER short-circuit batteries terminals for any reason.*

8. *NEVER hammer on battery posts or terminals.*

### **Before your Start.**

Electronic components can be damaged easily by electrical surges. Jump starting can damage electronic and electrical systems, is not recommended expect in extreme circumstances. Use quality, large diameter jumpers cables capable of carrying high current (400 amps or more). Cheap cables may not allow enough current flow to start a dead/discharged battery.

Read all procedure before operation and review all explanations.

### **12.2.3 Safety Alert**



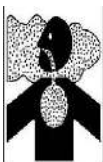
**⚠ DANGER** *Moving digging teeth will kill you or cut off arm or leg. Stay away.*



**⚠ DANGER** *Turning shaft will kill you or crush arm or leg. Stay away.*



**⚠ DANGER** *Electric shock. Contacting electric lines will cause death or serious injury. Know location of lines and stay away.*



**⚠ DANGER** Deadly gases death. Provide ventilation.

*Deadly gases. Lack of oxygen or presence of gas will cause sickness or death, provide ventilation.*



**⚠ WARNING** correct equipment equipment.

*Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment*



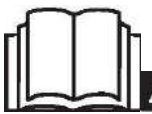
**⚠ WARNING** *Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.*



**⚠ WARNING** *Moving parts could cut off hand or foot. Stay away.*



**⚠ WARNING** *Explosion possible. Serious injury or equipment damage could occur. Follow directions carefully.*



**⚠ WARNING** *Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.*



**⚠ WARNING** *Improper control function could cause death or serious injury. If control does not work as described in instructions, stop machine and have it serviced.*



**⚠ WARNING** *Looking into fiber optic cable could result in permanent vision damage. Do not look into ends of fiber optic or unidentified cable.*



**⚠ WARNING** *Fluid or air pressure could pierce skin and cause injury or death. Stay away.*



**⚠ WARNING** *Runaway possible. Machine could run over you or others. Learn how to use all controls. Start and operate only from operator's position.*



**⚠ WARNING** *Fire or explosion possible. Fumes could ignite and*

*cause burns. No smoking, no flame, no spark.*



**⚠ WARNING**

*Moving traffic-hazardous situation. Death or serious injury could result. Avoid moving vehicles, wear high visibility clothing, post appropriate warning signs.*



**⚠ CAUTION**

*Flying objects may cause injury. Wear hard hat and safety glasses.*



**⚠ CAUTION**

*Hot parts may cause burns. Do not touch until cool.*



**⚠ CAUTION**

*Exposure to high noise levels may cause hearing loss. Wear hearing protection.*



**⚠ CAUTION**

Fall possible. Slips or trips may result in injury. Keep area clean.



**⚠ CAUTION**

Battery acid may cause burns. Avoid contact.



**⚠ CAUTION**

*Improper handling or use of chemicals may result in illness, injury, or equipment damage. Follow instructions on labels and in material safety data sheets (MSDS).*

## **Emergency Procedures**

Before operating any equipment, review emergency procedures and check that all safety precautions have been taken.

**EMERGENCY SHUTDOWN** - Turn ignition switch to STOP.

### **Electric Strike Description**

When working near electric cables, remember the following:

Electricity follows all paths to ground, not just path of least resistance.

Pipes, hoses, and cables will conduct electricity back to all equipment.

Low voltage current can injure or kill. Almost one-third of work-related electrocutions result from contact with less than 440 volts.

Most electric strikes are not noticeable, but indications of a strike include:

1. Power outage
2. Smoke
3. Explosion
4. Popping noises
5. Arcing electricity

If any of these occur, assume an electric strike has occurred.

### **If an Electric Line is damaged**

If you suspect an electric line has been damaged and you are on tractor, DO NOT MOVE. Remain on tractor and take the following actions. The order and degree of action will depend upon the situation.

Warn people nearby that an electric strike has occurred. Instruct them to leave the area and contact utility.

Raise attachments and drive from immediate area.

Contact utility company to shut off power.

- Do not return to jobsite or allow anyone into area until given permission by utility company.

If you suspect an electric line has been damaged and you are off tractor, DO NOT TOUCH TRACTOR. Take the following actions. The order and degree of action will depend upon the situation.

LEAVE AREA. The ground surface may be electrified, so take small steps with feet close together to reduce the hazard of being shocked from

one foot to the other. For more information, contact your Ditch Witch dealer.

Contact utility company to shut off power.

Do not return to jobsite or allow anyone into area until given permission by utility company.

### **If a Gas Line is damaged**

If you suspect a gas line has been damaged, take the following actions. The order and degree of action will depend on the situation.

Immediately shut off engine(s), if this can be done safely and quickly.

Remove any ignition source(s), if this can be done safely and quickly.

Warn others that a gas line has been cut and that they should leave the area.

Leave jobsite as quickly as possible.

Immediately call your local emergency phone number and utility company.

If jobsite is along street, stop traffic from driving near jobsite.

Do not return to jobsite until given permission by emergency personnel and utility company.

### **If a Fiber Optic Cable is damaged**

Do not look into cut ends of fiber optic or unidentified cable. Vision damage can occur.

### **If Machine Catches on Fire**

Perform emergency shutdown procedure and then take the following actions. The order and degree of action will depend on the situation.

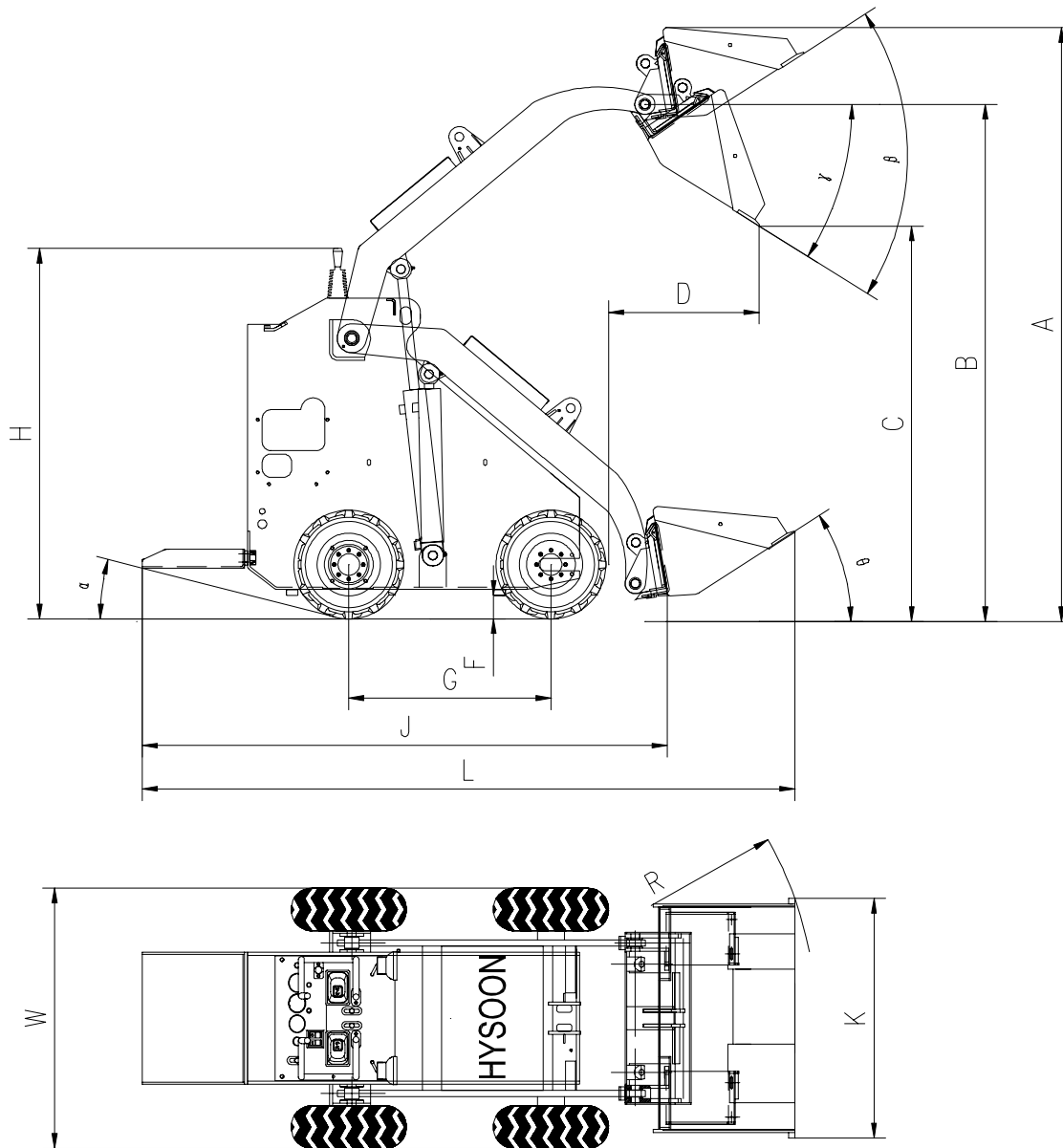
Immediately move battery disconnect switch (if equipped) to disconnect position.

If fire is small and fire extinguisher is available, attempt to extinguish fire.

If fire cannot be extinguished, leave area as quickly as possible and contact emergency personnel.

# 13. MAIN PARAMETERS

## Tyre Parameters

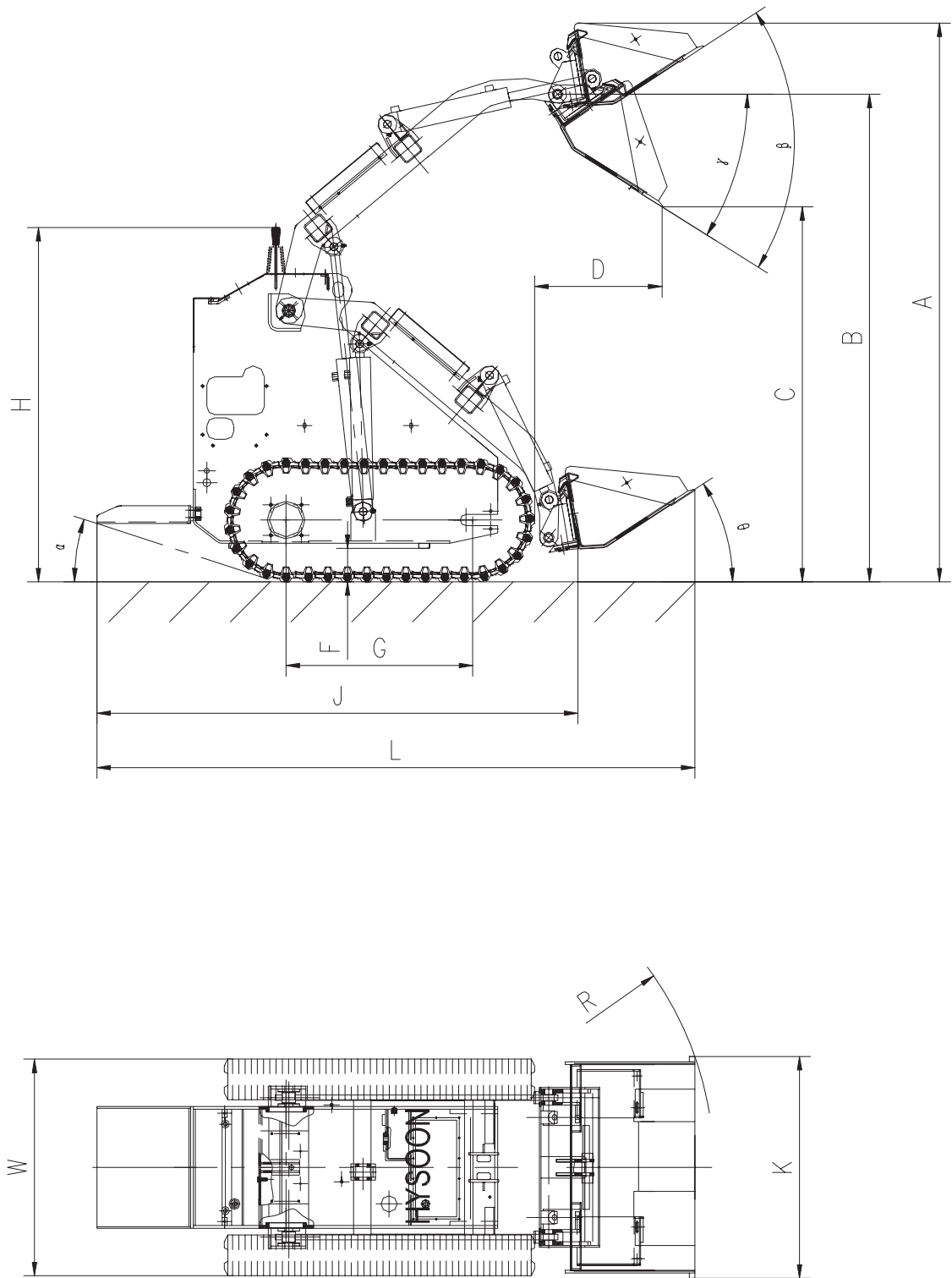


**Main Dimensions (mm):**

Items	HY280 Designed Specifications			
	With Solid Tyre	With Narrow Tyre	With Turf Tyre	With Chevron Tyre
Max. working height(A)	2032	2072	2072	2060
Max. pin height (B)	1769	1809	1809	1798
Max. dumping height (C)	1353	1393	1393	1381
Highest point dump distance (D)	508	468	468	480
Bucket up and down range ( $\beta$ )	65°	65°	65°	65°
Bucket dump angle ( $\gamma$ )	32°	32°	32°	32°
Bucket connection angle ( $\theta$ )	33°	33°	33°	33°
Departure angle ( $\alpha$ )	15°	19°	19°	18°
Total height(H)	1276	1316	1316	1304
Ground clearance (F)	90	130	130	119
Wheelbase (G)	686	686	686	686
Length without bucket (J)	1778	1778	1752	1778
Overall width (W)	883	883	1033	1010
Bucket width (K)	820	820	820	820
Overall length with bucket (L)	2210	2210	2210	2210
Turning radius (R)	1237	1237	1243	1243



# Track Parameter



**Main Dimensions (mm):**

Item	HY280 designed specifications	
	Track	
Max. operating height (A)	2065	
Max. pin height (B)	1803	
Max. dump height (C)	1386	
Highest point dump distance (D)	471	
Bucket ( $\beta$ )	65°	
Bucket dump angle ( $\gamma$ )	32°	
Bucket return angle ( $\theta$ )	33°	
Angle of departure ( $\alpha$ )	15°	
Overall height (H)	1308	
Ground clearance (F)	123	
Wheelbase (G)	690	
Length without bucket (J)	1778	
Wheel distance (W)	801	
Overall width (K)	820	
Overall length with bucket(L)	2210	
Turning radius (R)	1236	

## Main Specifications:

Item		HY280			
Engine	Rated power (KW)	15.435KW (21HP)			
	Rated speed (rpm)	3600			
Noise (Db)		≤95			
Hydraulic system	System pressure (Mpa)	17			
	Cycle time(s)	Raise	Dump	Lower	
		3.31	0.72	1.95	
Parameter		Metric system	English system		
	Operating load	165 Kg	363.8 Lb		
	Bucket Capacity	0.12 m <sup>3</sup>	4.26 ft <sup>3</sup>		
	Max. lifting force	375 Kg	827 Lb		
	Speed	0-5.5 Km/h	0-3.4 miles/h		
	Operating weight	With Solid tyres	794 Kg	1750.5 Lb	
		With narrow tyres	740Kg	1631.4 Lb	
		With Turf Tyres	704 Kg	1552 Lb	
With Tracks		855kg	1884 Lb		
Tyre Model	With Solid Tyres	16×6-8			
	With Narrow Tyres	5.00-8			
	With Turf Tyres	KT-302 18*9.5-8 6P/TL			
	With Chevron Engine Tyres	18*6.5-8			
	With Track	150*72*37			
Rim	With solid Tyres	4.33R-8			
	With Narrow Tyres	3.50D			
	With Turf Tyres	8*6.5			

### Remarks:

The above-mentioned specifications are just for reference and subject to change without notice.

## **14. SUPPORT**

1. Notify your dealer immediately of any malfunction or failure of the equipment
2. Always give model, serial number, and approximate date of your equipment purchase. This information should be recorded and placed on file by the owner at the time of purchase
3. Return damaged parts to dealer for inspection and warranty consideration if in warranty time frame.
4. Order genuine HYSOON replacement or repair parts from your authorized Ditch Witch dealer. Use of another manufacturer's parts may void warranty consideration.
5. Contact the dealer for videos and publications on safety .operation and maintenance
6. Contact your dealer for internet information and personal training.
7. The equipment is subject to change without notice.