GEHL

Form No.
917388/
BP0310
English

SL1640E
SL1640E (EU)

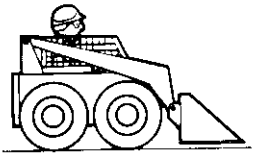
Skid-Steer Loaders

Operator's Manual

Gehl Company, in cooperation with the American Society of Agricultural Engineers and the Society of Automotive Engineers, has adopted this Safety Alert Symbol to pinpoint precautions which, if not properly followed, can create a safety hazard. When you see this symbol in this manual or on the machine itself, you are reminded to BE ALERT! Your personal safety is involved!

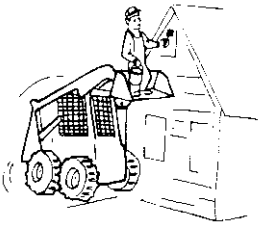
Operators must have instructions before running the machine. Untrained operators can cause injury or death.

WRONG



Never use loader without ROPS/FOPS. Never modify the ROPS/FOPS structure.

WRONG

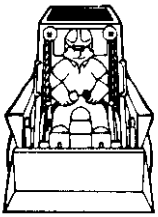


Never use the loader to lift personnel.

CORRECT

Read Operator's Manual before using machine.

CORRECT



Always fasten seatbelt snugly. Always keep feet on the floor/pedals when operating loader.

WRONG

Do not use loader around explosive dust or gas, or where exhaust can contact flammable material.

SL1640 and SL1640E (EU) Skid-Steer Loader Operator's Manual

TABLE OF CONTENTS

Loader Model Number	
Loader Serial Number	
Engine Serial Number	

GEHL

EC DECLARATION OF CONFORMITY

1. Manufacturer: **Gehl Company**
2. Address: **One Gehl Way**
   West Bend, WI 53095 U.S.A.
   FAX: 262-334-6687
3. Technical Construction File Location:
   Attn.: Quality Manager
   915 SW 7th St.
   Madison, SD 57042 U.S.A.
4. Authorized Representative: **Gehl Europe GmbH**
5. Address: **Burgsteinfurter Damm 89**
   D-48485 Neuenkirchen/Rheine
   GERMANY
6. **We hereby declare that the model(s) listed below conforms to EC Directives: 2004/108/EC (EMC), 97/23/EC (Pressure Equipment), 2006/42/EC (Machinery) and 2000/14/EC (Noise Emission), including all current amendments.**
7. In accordance with EN/ISO Standards:
   EN ISO 3450:1996, ISO 6165
8. Category: **EARTH-MOVING MACHINERY/ LOADERS/COMPACT**
9. Model(s): **1640E**
10. Directive/Conformity Assessment Procedure/Notified Body:

2004/108/EC	**Type-test**	**Self-certification**
97/23/EC	**Self-certification**	**----------**
2006/42/EC	**Self-certification**	**----------**
2000/14/EC	**Annex VIII – Full Quality Assurance**	**TÜV Industrie Service GmbH – TÜV SÜD Group Westendst. 199, D-80686 München GERMANY**

CHAPTER 1

INTRODUCTION

This Operator's Manual provides the owner/operator information about maintaining and servicing SL1640E (EU) skid-steer loader models. More importantly, this manual provides an operating plan for safe and proper use of the machine. Major points of safe operation are detailed in the *Safety* chapter of this manual.

We ask that you read and understand the contents of this manual completely and become familiar with your new machine before operating it. See your authorized Gehl dealer if you have any questions concerning information in the manual, require extra manuals or for information concerning the availability of manuals in other languages.

Throughout this manual, information is provided set in *italic* type and introduced by the word ***Note*** or ***Important***. Read carefully and comply with those messages – it will improve your operating and maintenance efficiency, help avoid breakdowns and damage, and extend your machine's life.

A manual storage box in the operator's compartment holds the Operator's Manual and AEM Safety Manual (also available in Spanish). Please return the manuals to this box and keep them with the unit at all times. If this machine is resold, we recommend that these manuals be given to the new owner.

The attachments and equipment available for use with this machine have a wide variety of potential applications. Read the manual provided with the attachment to learn how to safely maintain and operate the equipment. Be sure the machine is suitably equipped for the type of work to be performed.

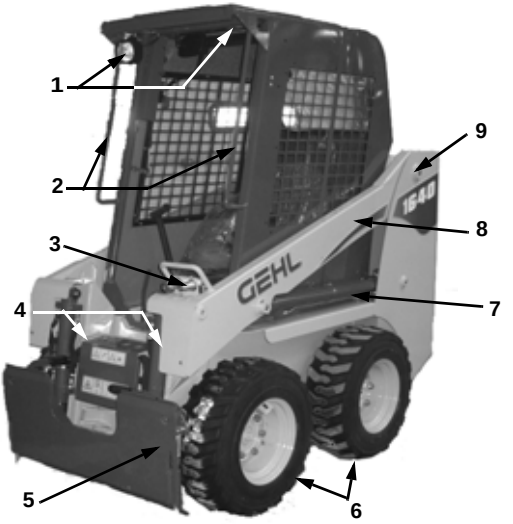
Do not use this machine for any applications or purposes other than those described in this manual or those applicable for approved attachments. If the machine is to be used with special attachments or equipment other than those approved by Gehl Company, consult your Gehl dealer. Any person using non-approved attachments or making unauthorized modifications is responsible for the consequences.

The Gehl dealership network stands ready to provide you with any assistance you may require, including providing genuine Gehl service parts. All service parts should be obtained from your Gehl dealer. Provide complete information about the part and include the model and serial numbers of your machine. Record these numbers in the space provided on the Table of Contents page, as a handy reference.

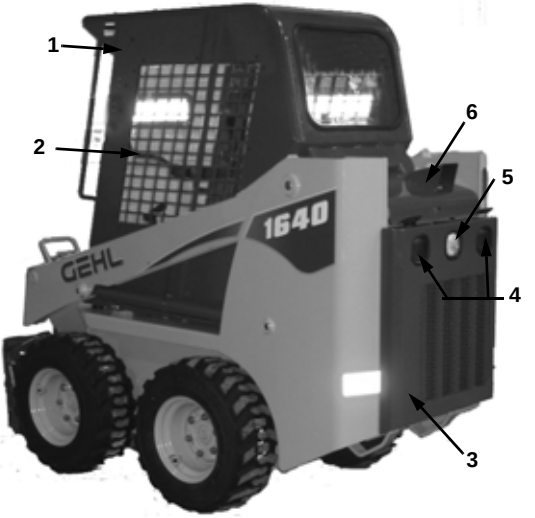
Gehl Company strives to continuously improve its products and reserves the right to make changes and improvements in the design and construction of any part without incurring the obligation to install such changes on any previously delivered unit.

If this machine was purchased "used", or if the owner's address has changed, please provide your Gehl dealer or Gehl Company Service Department with the owner's name and current address, along with the machine model and serial number. This will allow the registered owner information to be updated, so that the owner can be notified directly in case of an important product issue.

Loader Identification

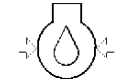
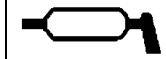
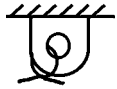


1. Front Work Lights
2. Handholds
3. Auxiliary Hydraulic Couplers
4. Tilt Cylinders
5. Attachment Bracket
6. Tires
7. Lift Cylinder
8. Lift Arm
9. Upright



1. Roll-Over/Falling Object Protective Structure (ROPS/FOPS)
2. Restraint Bar
3. Rear Door
4. Tail Lights
5. Rear Work Light
6. Engine Cover

Control/Indicator Symbols

 Power Off	 Power On	 Engine Start	 Hazard Flasher	 Worklight
 Worklight w/Flasher	 Battery Charge	 Parking Brake	 Read Operator's Manual	 Horn
 Volume – Full	 Volume – Half Full	 Volume – Empty	 Pre-Heat	 Diesel Fuel
 Lift Point	 Neutral	 Safety Alert	 Chaincase Oil	 Seatbelt – Lap Only
 Engine Air Filter	 Engine Oil	 Engine Oil Filter	 Engine Oil Pressure	 Fuel Filter
 Engine Coolant Temperature	 Hydraulic System	 Hydraulic Oil Temperature	 Hydraulic Oil Filter	 Grease Lubrication Point
 Tie-Down	 Machine Travel – Forward	 Machine Travel – Reverse	 Clockwise Rotation	 Counterclockwise Rotation
 Fast	 Slow	 Bucket – Lower	 Bucket – Raise	 Bucket – Float
 Bucket – Rollback	 Bucket – Dump			

Notes

CHAPTER 2

SAFETY

This safety alert symbol means Attention! Become alert! Your safety is involved! It stresses an attitude of safety awareness and can be found throughout this Operator's Manual and on the decals on the machine.

Before operating this machine, read and study the following safety information. Be sure that everyone who operates or works with this machine, whether family member or employee, is familiar with these safety precautions. It is essential to have competent and careful operators, who are not physically or mentally impaired, and who are thoroughly trained in the safe operation of the machine and the handling of loads. It is recommended that the operator be capable of obtaining a valid motor vehicle operator's license.

The use of skid-steer loaders is subject to certain hazards that cannot be eliminated by mechanical means, but only by exercising intelligence, care and common sense. Such hazards include, hillside operation, overloading, instability of the load, poor maintenance and using the equipment for a purpose for which it is not intended or designed.

Gehl ALWAYS considers the operator's safety when designing its machinery, and guards exposed moving parts for the operator's protection. However, some areas cannot be guarded or shielded in order to assure proper operation. Furthermore, this Operator's Manual and decals on the machine warn of additional hazards and they should be read and observed closely.

Some photographs in this manual may show doors, guards and shields open or removed for illustrative purposes only. Be sure that all doors, guards and shields are in their proper operating positions before starting the engine to operate the unit.

Different applications may require optional safety equipment, such as a back-up alarm, mirror, strobe light or an impact-resistant front door. Be sure you know the job site hazards and equip your machine as needed.

DANGER **"DANGER" indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.**

WARNING **"WARNING" indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.**

CAUTION **"CAUTION" indicates a potentially hazardous situation, which, if not avoided may result in minor or moderate injury. May also alert against unsafe practices.**

Mandatory Safety Shutdown Procedure

Before cleaning, adjusting, lubricating, servicing the unit, or leaving it unattended:

1. Move the drive control handle(s) to the neutral position.
2. Lower the lift arm and attachment completely. If the lift arm *must* be left in the raised position, BE SURE to properly engage the lift arm support device (page 20).
3. Move the throttle to the low idle position, shut off the engine and remove the key.
4. Before exiting, move the lift/tilt control(s) to verify that the controls do not cause movement of the lift arm or attachment.

Safety Reminders

Before Starting

- Do not modify the ROPS/FOPS unless instructed to do so in installation instructions. Modifications such as welding, drilling or cutting can weaken the structure and reduce the protection it provides. A damaged ROPS/FOPS cannot be repaired – it must be replaced.
- To ensure safe operation, replace damaged or worn-out parts with genuine Gehl service parts.
- Gehl skid-steer loaders are designed and intended to be used only with Gehl attachments or approved referral attachments. Gehl cannot be responsible for operator safety if the loader is used with a non-approved attachment.
- Remove all trash and debris from the machine each day, especially in the engine compartment, to minimize the risk of fire.
- Always face the loader and use the handholds and steps when getting on and off the loader. Do not jump off the loader.
- Never use starting fluid (ether).
- Walk around the machine and warn all nearby personnel before starting the machine.
- Always perform a daily inspection of the machine before using it. Look for damage, loose or missing parts, leaks, etc.

During Operation

- Machine stability is affected by: the load being carried, the height of the load, machine speed, abrupt control movements and driving over uneven terrain. **DISREGARDING ANY OF THESE FACTORS CAN CAUSE THE LOADER TO TIP, THROWING THE OPERATOR OUT OF THE SEAT OR LOADER, RESULTING IN DEATH OR SERIOUS INJURY.** Therefore: ALWAYS operate with the seatbelt fastened and the restraint bar lowered. Do not exceed the machine's Rated Operating Load. Carry the load low. Move the controls smoothly and gradually, and operate at speeds appropriate for the conditions.
- When operating on inclines or ramps, always travel with the heavier end of the loader toward the top of the incline for additional stability.
- Do not raise or drop a loaded bucket or fork suddenly. Abrupt movements under load can cause serious instability.
- Never activate the float function with the bucket or attachment loaded or raised, because this will cause the arm to lower rapidly.
- Do not drive too close to an excavation or ditch; be sure that the surrounding ground has adequate strength to support the weight of the loader and the load.
- Never carry riders. Do not allow others to ride on the machine or attachments, because they could fall or cause an accident.
- Always look to the rear before backing up the skid-steer loader.
- Operate the controls only from the operator's seat.
- Always keep hands and feet inside the operator's compartment while operating the machine.
- New operators must operate the loader in an open area away from bystanders. Practice with the controls until the loader can be operated safely and efficiently.
- Always wear safety goggles, ear and head protection while operating the machine. Operator must wear protective clothing when appropriate.
- Exhaust fumes can kill. Do not operate this machine in an enclosed area unless there is adequate ventilation.
- When parking the machine and before leaving the seat, check the restraint bar for proper operation. The restraint bar, when raised, deactivates the lift/tilt controls and auxiliary hydraulics, and applies the parking brake.

Maintenance

- Never attempt to by-pass the keyswitch to start the engine. Use only the jump starting procedure detailed in the *Operation* chapter of this manual.
- Never use your hands to search for hydraulic fluid leaks. Instead, use a piece of paper or cardboard. Escaping fluid under pressure can be invisible and can penetrate the skin and cause serious injury. If any fluid is injected into your skin, see a doctor at once. Injected fluid must be surgically removed by a doctor or gangrene may result.

- Always wear safety glasses with side shields when striking metal against metal. In addition, it is recommended that a softer (chip-resistant) material be used to cushion the blow. Failure to heed could lead to serious injury to the eyes or other parts of the body.
- Do not smoke or have any spark-producing equipment in the area while filling the fuel tank or while working on the fuel or hydraulic systems.

Potential Hazards

A skid-steer loader operator must ALWAYS be conscious of the working environment. Operator actions, environmental conditions and the job being done require the full attention of the operator so that safety precautions can be taken.

ALWAYS maintain a safe distance from electric power lines and avoid contact with any electrically charged conductor or gas line. Accidental contact or rupture can result in electrocution or an explosion. Contact the North American One-Call Referral System at 8-1-1 in the U.S., or 1-888-258-0808 in the U.S and Canada, for the local “Digger's Hotline” number or the proper local authorities for utility line locations BEFORE starting to dig!

Exposure to crystalline silica (found in sand, soil and rocks) has been associated with silicosis, a debilitating and often fatal lung disease. A Hazard Review (Pub. No. 2002-129) by the U.S. National Institute for Occupational Safety and Health (NIOSH) indicates a significant risk of chronic silicosis for workers exposed to inhaled crystalline silica over a working lifetime. NIOSH recommends an exposure limit of 0.05 mg/m^3 as a time-weighted average for up to a 10-hr workday during a 40-hr workweek. NIOSH also recommends substituting less hazardous materials when feasible, using respiratory protection and regular medical examinations for exposed workers.

Safety Decals

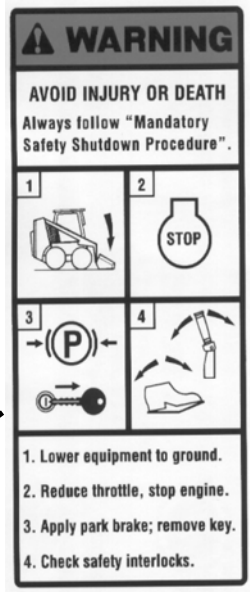
The skid-steer loader has decals that provide safety information and precautions around the loader. These decals must be kept legible. If missing or illegible, they must be replaced promptly. Replacements can be obtained from your Gehl dealer. New equipment must have all decals specified by the manufacturer affixed in their proper locations.

New Decal Application

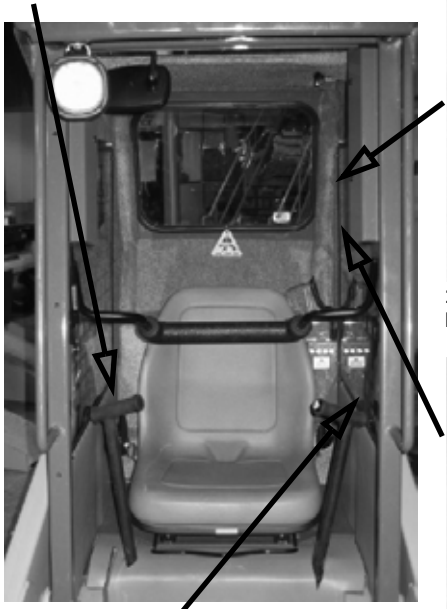
Surfaces must be free of dirt, dust, grease and foreign material before applying the decal. Remove the smaller portion of the decal backing paper and apply the exposed adhesive to the clean surface, maintaining proper position and alignment. Peel the rest of the backing paper and apply hand pressure to smooth out the decal surface. Refer to the following pages for proper decal locations. Text decals begin on page 9; no-text decals begin on page 12.

Safety Decals inside the ROPS/FOPS

137628 – Located on manual box, operator's right



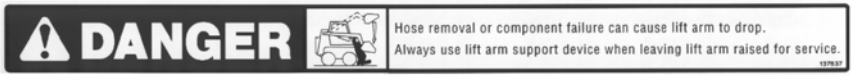
137683 – Located on ROPS left panel



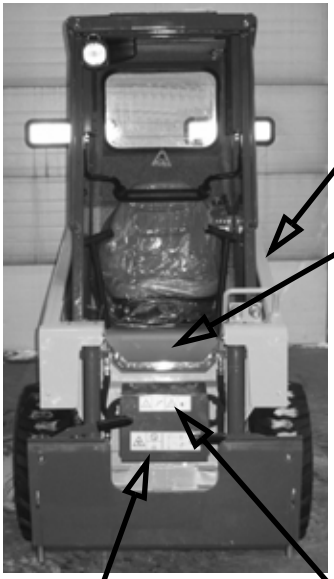
137647 – Located on operator's lower left side

137639 – Located on ROPS left panel

Safety Decals on the outside of the Skid Loader

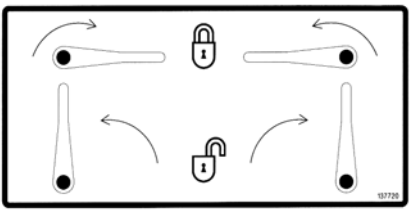


137637 – Lift arm support device, loader left side



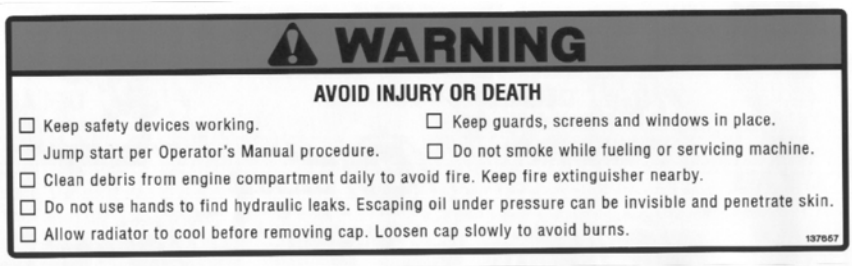
184214 – Under ROPS

137655 – Front of loader

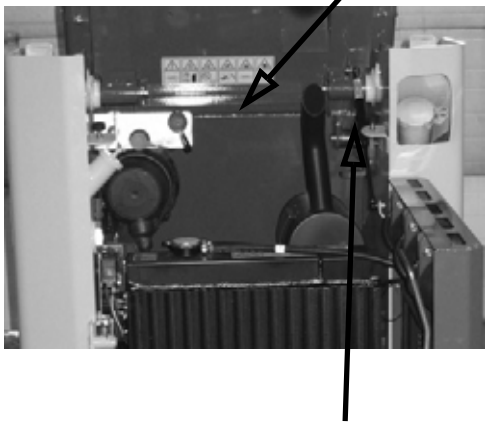


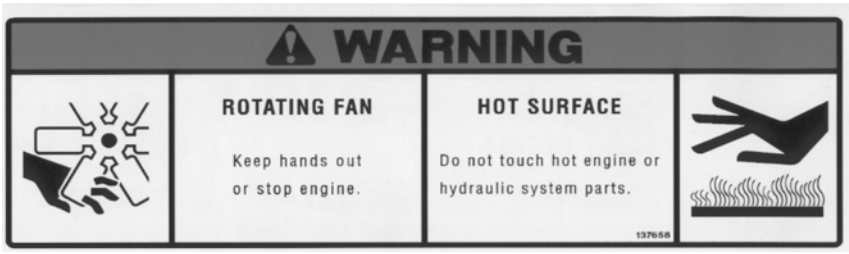
137720 – Front of loader

Safety Decals in the Engine Compartment



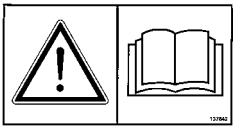
137657 – Right of hydraulic filter





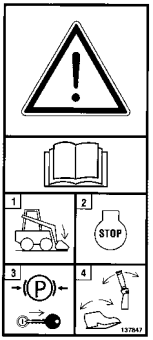
137658 – On radiator

ISO-Style (used Internationally) Safety Decals inside the ROPS/FOPS



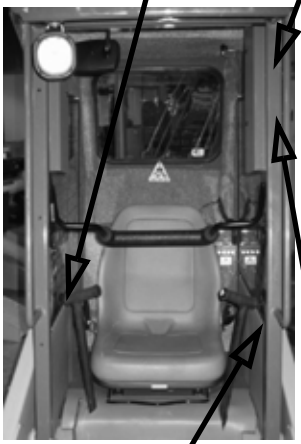
137842 – Located on manual storage box

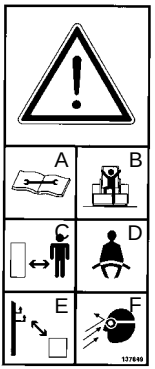
Safety alert: Read Operator's Manual and all safety signs before using machine. The owner is responsible to ensure all users are instructed on safe use and maintenance.



Safety alert: Always follow "Mandatory Safety Shutdown Procedure" in Operator's Manual.
1 – Lower equipment to ground.
2 – Reduce throttle, stop engine.
3 – Apply parking brake; remove key.
4 – Check safety interlocks.

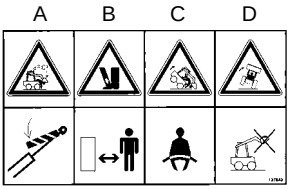
137847 – Part of left instrument panel





137849 – Part of left instrument panel

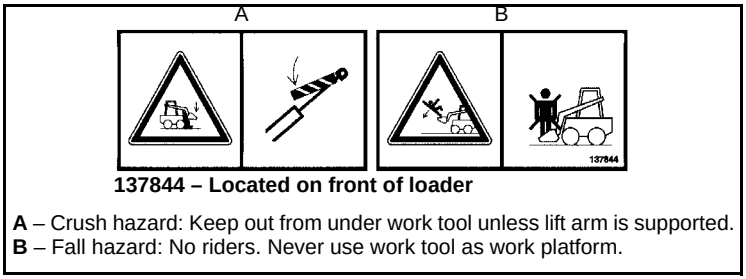
Safety alert:
A – Check machine before operating; Service per Operator's Manual. Contact dealer (or manufacturer) for information and service parts.
B – Maintain 3-point contact during entry and exit.
C – Inspect work area. Avoid all hazards. Look in direction of travel. Keep children and bystanders away.
D – Start and operate machine only from seat.
E – Keep away from power lines; avoid contact.
F – Wear any needed Personal Protective Equipment. Do not wear loose clothing while operating or servicing machine.



137843 – Located on operator's lower left side

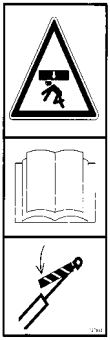
A – Crush hazard: Keep out from under lift arm unless lift arm is supported.
B – Crush hazard: Keep hands, feet and body inside cab when operating.
C – Forward tip hazard: Fasten seat belt. Carry load low. Do not exceed Rated Operating Load.
D – Side tip hazard: Avoid steep slopes and high speed turns. Travel up and down slopes with heavy end uphill.

ISO-Style (used Internationally) Safety Decals on the outside of the Skid-Steer Loader



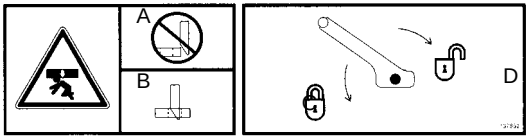
137844 – Located on front of loader

A – Crush hazard: Keep out from under work tool unless lift arm is supported.
B – Fall hazard: No riders. Never use work tool as work platform.



137853 – Located on lift arm support device

Crush hazard: Hose removal or component failure can cause lift arm to drop. Always use lift arm support device when leaving arm raised for service.

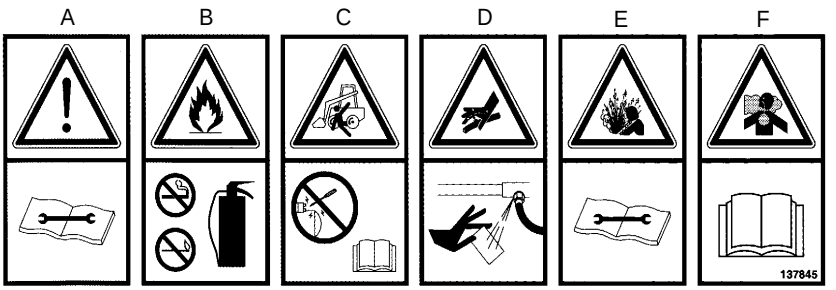


137852 – Located on hitch (manual hitch loaders only)

Crush hazard: Before operating with attachment, check engagement of hitch locking pin to the attachment:

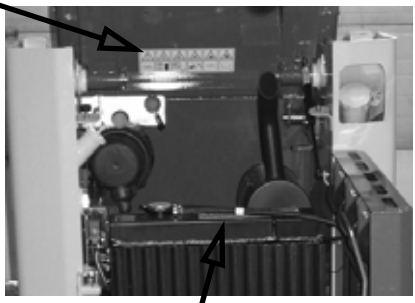
A – Incorrect attachment engagement
B – Correct attachment engagement
C – Lock hitch lever
D – Unlock hitch lever

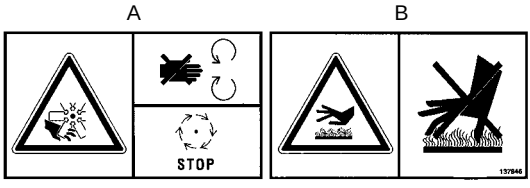
ISO-Style (used Internationally)
Safety Decals in the Engine Compartment



137845 – Located on cross member for frame

A – Safety alert: Keep safety devices in place and in working order. Keep guards, screens and windows in place.
B – Fire hazard: Do not smoke while fueling or servicing machine. Clean debris from engine compartment daily to avoid fire. Keep fire extinguisher nearby.
C – Run-over hazard: Jump-start per Operator's Manual procedure.
D – Oil injection hazard: Do not use hands to find hydraulic leaks. Escaping oil under pressure can be invisible and penetrate skin. Use a piece of cardboard to find leaks.
E – Burn hazard: Allow radiator to cool before removing cap. Loosen cap slowly to avoid burns.
F – Suffocation hazard: Operate only in a well-ventilated area.

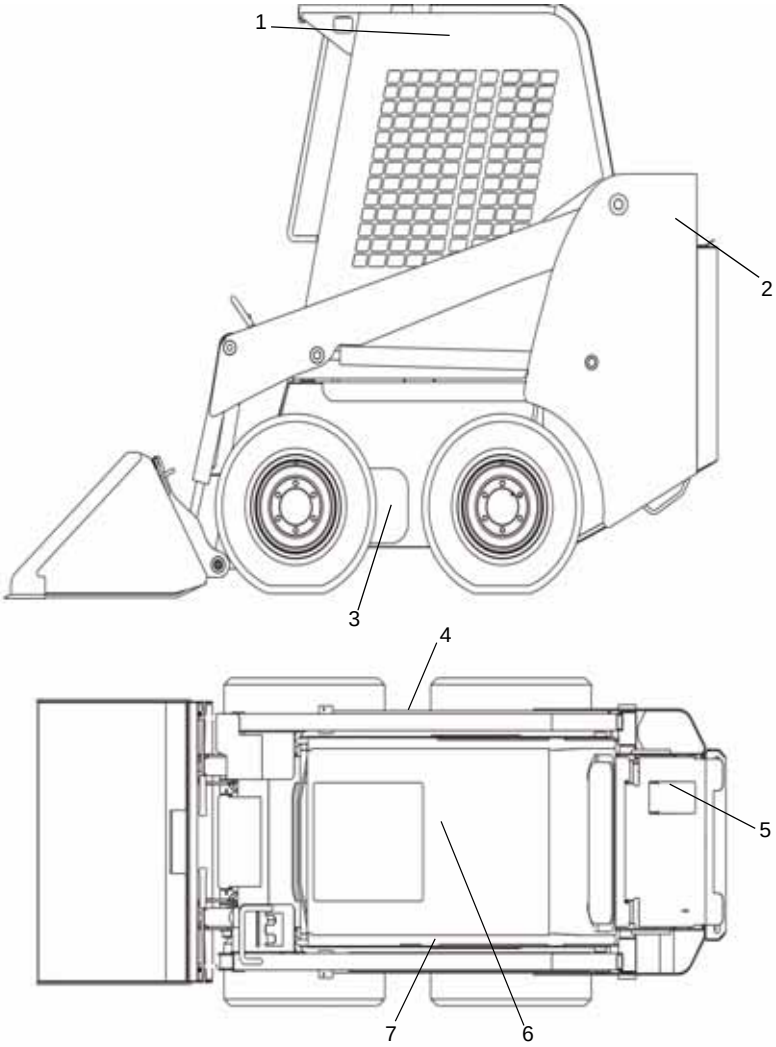




137845 – Located on cross member for frame

A – Rotating fan: Keep hands out or stop engine.
B – Hot surface: Do not touch hot engine or hydraulic system parts.

Product and Component Plate Locations



Product and Component Plates

1. Operator protective system plate: with, e.g., model, certification and operator protective system serial number
2. Product plate: with Product Identification Number and, e.g., model/type designation
3. Component plate transmission: with, e.g., product and serial numbers
4. Component plate rear drive axle: with, e.g., product and serial numbers
5. Engine plate: with, e.g., type designation, product and serial numbers
6. Seat plate according to ISO 7096
7. Component plate front drive axle: with, e.g., product and serial number

Notes

CHAPTER 3

CONTROLS AND SAFETY EQUIPMENT

⚠ CAUTION Become familiar with and know how to use all safety devices and controls on the skid-steer loader before operating it. Know how to stop loader operation before starting it. This Gehl loader is designed and intended to be used only with a Gehl attachment or a Gehl-approved referral attachment or accessory. Gehl cannot be responsible for operator safety if the loader is used with a non-approved attachment.

Guards and Shields

Whenever possible and without affecting loader operation, guards and shields are provided to protect against potentially hazardous areas. In many places, safety decals are also provided to warn of potential hazards and/or to display special operating procedures.

⚠ WARNING Read and thoroughly understand all safety decals on the loader before operating it. Do not operate the loader unless all factory-installed guards and shields are properly secured in place.

Operator Restraint Bar

Lower the restraint bar after entering the operator's compartment. The restraint bar is securely anchored to the ROPS. The restraint bar switch is wired in series with the seat switch forming an interlock for the lift arm, tilt, drive and starter circuits (refer to the *Safety Interlock System* on page 18 for more information).

⚠ WARNING Never defeat the operator restraint bar or seat switch electrically or mechanically. Always wear the seatbelt.

Operator's Seat

The seat is mounted on rails for backward or forward repositioning. A spring-loaded latch handle activates the seat adjustment mechanism.

Suspension seat (optional): A weight adjustment knob is provided with this seat for operator comfort.

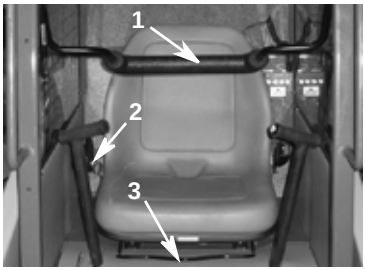


Figure 1 Operator's Seat

1. Restraint Bar
2. Seatbelt
3. Seat Adjustment Level

Safety Interlock System

⚠ WARNING NEVER defeat the safety interlock system by mechanically or electrically bypassing any switches, relays or solenoid valves.

An interlock system is used on the loader for operator safety. Together with solenoid valves, switches and relays, the interlock system:

- Prevents the engine from starting unless the operator is sitting on the seat and the operator restraint bar is down.
- Disables the lift arm, attachment tilt and wheel drives when the operator leaves the seat, turns the keyswitch to OFF or raises the restraint bar.
- Disables auxiliary hydraulic system when the restraint bar is raised or the keyswitch is OFF.

Testing the Safety Interlock System

Before leaving a parked machine, check the safety interlock system for proper operation:

Restraint Bar

With the engine running, raise the restraint bar. Move each of the controls. There should be not more than a slight movement of the lift arm, attachment and machine. If there is any significant movement, troubleshoot and correct the problem immediately. Contact your dealer if necessary.

Seat Switch

With the engine off and the restraint bar lowered, unfasten the seatbelt. Lift your weight up off the seat. Try to start the engine. If the engine starts, turn off the engine, and troubleshoot and correct the problem. Contact your dealer if necessary.

ROPS/FOPS

The ROPS/FOPS (Roll Over/Falling Object Protective Structure) is designed to provide protection for the operator from falling objects and in case the loader tips or rolls over, provided the operator is secured inside the ROPS by the seatbelt and restraint bar.

⚠ WARNING **Never operate the loader with the ROPS/FOPS removed or locked back.**

Parking Brake

This skid-steer loader is equipped with a spring-applied hydraulic-released parking brake. The parking brake engages when the operator lifts the restraint bar, leaves the operator's seat or shuts off the engine. The brake can also be applied manually by using the switch located on the right control panel of the ROPS. The red indicator on the switch lights when the parking brake is applied.

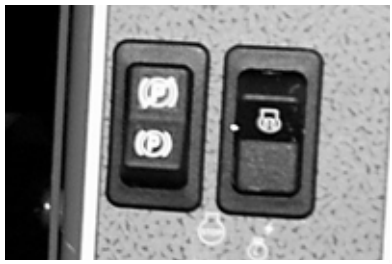


Figure 2 Parking Brake Switch

Rear Window Emergency Exit

The rear window has three functions: noise reduction, flying objects barrier and emergency exit.

To use the emergency exit, pull on the yellow warning tag at the bottom of the window and remove the seal. Push out the window and exit.

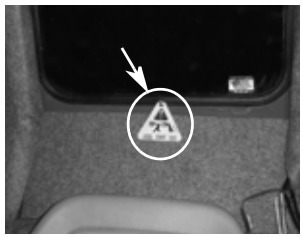


Figure 3 Rear Window Emergency Exit Pull Tag

Lift Arm Support Device

The lift arm support device on the left lift cylinder is used as a cylinder lock to prevent the raised lift arm from unexpectedly lowering. Be sure to engage the support device when the lift arm is raised for service. When the support device is not being used, store it under the lift arm using the slide latch. The support device is a safety device that must be kept in proper operating condition at all times. The following steps ensure correct usage:

⚠ WARNING The safest method of engaging the lift arm support device requires two people – one person inside the loader and another person to engage the support device.

Note: *With the keyswitch OFF and the solenoid valve working, the lift arm will stay raised when the lift control is moved to lower the lift arm. If the valve does not hold the lift arm and it begins to lower, do not leave the operator's compartment. Instead, have someone store the support device for you. Then, contact your Gehl dealer immediately to determine why the lift arm lowers while the keyswitch is OFF.*

Engagement

⚠ WARNING Always engage the lift arm support device before leaving the operator's compartment to work on the loader with the lift arm raised.

To engage the lift arm support device:

1. Raise the lift arm fully.
2. Stop the engine.
3. Remove the lift arm support device from it's storage location (Figure 5).
4. Place the lift arm support device on the left cylinder rod (Figure 4).
5. Return to the operator's compartment and start the engine.
6. Slowly lower the lift arm until the support device contacts the top end of the lift cylinder. Then, stop the engine, remove the key and leave the operator's compartment.

Figure 4 Lift Arm Support Device Engaged

Disengagement

WARNING **Never leave the operator's compartment to disengage the lift arm support device with the engine running.**

To return the lift arm support device to its storage position:

1. Raise the lift arm completely.
2. Stop the engine, remove the key and take it with you.

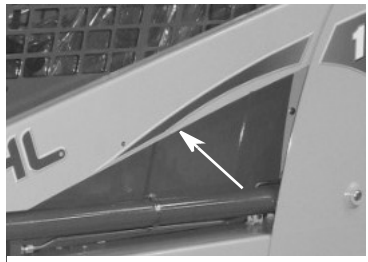


Figure 5 Lift Arm Support Device In Storage Position

WARNING **Before testing the loader, always clear people from the area.**

3. Before leaving the operator's compartment, be sure that the lift arm is being held in the raised position by the safety interlock system.
4. To store the support device, remove it from the lift cylinder rod and return it to its storage location (Figure 5). Secure the support device under the lift arm with the slide latch.

Accessory Outlet

The 12-volt accessory outlet is located at the bottom of the right instrument panel.

Engine Speed Control

A right-hand controlled throttle lever is provided on all models for adjusting the engine speed. Move the control forward to increase the engine speed and rearward to decrease the engine speed.

A right-foot operated accelerator pedal is provided to control the engine speed. The pedal linkage is spring-loaded to return to the hand throttle setting.

Figure 6 Throttle Lever

Figure 7 Foot Pedal

Right Instrument Panel

The instrument panel contains the following switches and indicators. Symbols on the panel represent various functions and conditions, and are visible only when indicator lamps are on.

1. **Fuel Level Gauge –** Displays the amount of fuel in the tank.
2. **Engine Coolant Temperature Gauge –** Indicates the engine coolant temperature.

Note: *Items 3 through 8 are indicator lamps which display the following:*

3. **Engine Coolant Temperature –** Lights if the engine coolant becomes too hot, warning the operator to stop the engine. Allow the engine to cool, determine the cause for the high temperature and correct the problem before restarting the engine. During normal operation this indicator should be OFF.
4. **Hydraulic Oil Temperature –** Lights if the hydraulic oil becomes too hot, warning the operator to stop engine. Allow the hydraulic system to cool and determine the cause of the high temperature. During normal operation this indicator should be OFF.
5. **Fasten Seatbelt** – A momentary visual (and audible) indicator to remind the operator to fasten the seatbelt.
6. **Engine Oil Pressure –** Lights if the engine oil pressure drops too low, warning the operator to immediately stop the engine and determine the cause for the pressure drop. During normal operation this indicator should be OFF.
7. **Battery –** Lights if the charging voltage is too high or too low. During normal operation this indicator should be OFF.

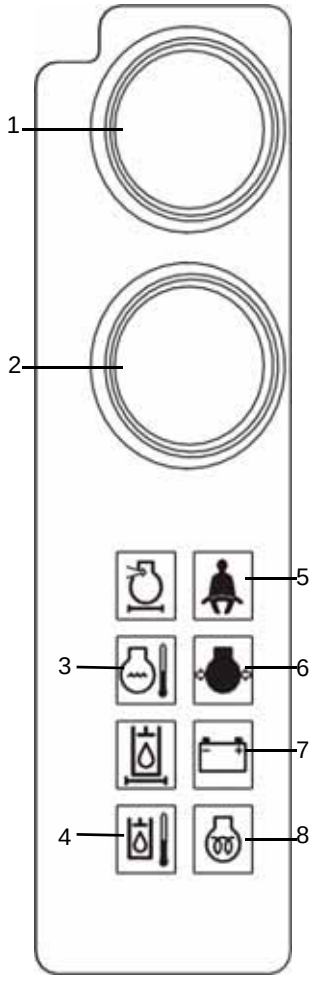


Figure 8 RIght Instrument Panel

8. **Preheat Indicator Lamp –** Lights when the preheat switch is pressed. During normal operation this indicator should be OFF.

Left Instrument Panel

1. **Hourmeter –** Displays the total operating hours on the loader.
2. **Light Switch –** Controls all the lights on the loader. Symbols denote the four positions of the light switch. In a clockwise direction these are:
   - OFF
   - Tail lights ON
   - Front work lights with tail lights ON
   - both front and rear work lights

   For the lights to function, the keyswitch must be in the RUN position.
3. **Parking Brake Switch –** Used to manually apply the parking brake. The red indicator on the switch lights when the parking brake is applied.
4. **Keyswitch –** In a clockwise rotation, these positions are:

   OFF Position – With the key vertical, power from the battery is disconnected to the controls and instrument panel electrical circuits. This is the only position the key can be inserted or removed from the keyswitch.

   ON (or Run) Position – With the key turned one position clockwise from vertical, power from the battery is supplied to all control and instrument panel electrical circuits.

   START Position – With the key turned fully clockwise, the electric starter energizes, to start the engine. Release the key to the RUN position after the engine starts.

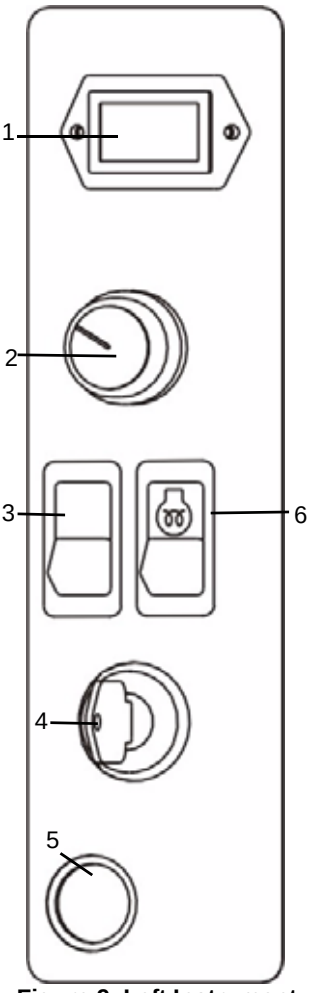


Figure 9 Left Instrument Panel

Note: *The engine cannot be started unless the operator is sitting in the seat, the restraint bar is lowered, and the auxiliary hydraulic control is in "neutral."*

5. **Accessory Outlet –** 12-volt DC power outlet.
6. **Preheat Switch –** Use to preheat the engine for starting in cold conditions.

T-Bar Controls

The Gehl loader is equipped with T-Bar controls. The left T-Bar controls the drive, and the right T-Bar controls the lift/tilt.

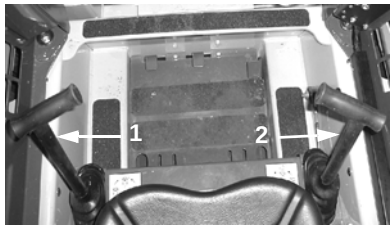


Figure 10 T-Bar Controls
1. Drive Control
2. Lift/Tilt Control

Drive Controls

Forward, reverse, speed and turning maneuvers are controlled by movement of the left T-Bar. To go **forward**, push the control forward; for **reverse**, pull the control rearward. To turn **right**, twist the control clockwise; to turn **left**, twist the control counterclockwise. For gradual turns, twist the T-Bar slightly clockwise or counterclockwise. For sharp turns, twist the control fully clockwise or counterclockwise.

Moving the T-Bar farther from neutral increases the speed steadily to the maximum travel speed. Tractive effort decreases as speed increases. For maximum tractive effort, move the T-Bar only slightly from the neutral position. The engine will stall if the control is moved too far forward when loading the bucket.

⚠ WARNING Be sure the controls are in neutral before starting the engine. Operate the controls gradually and smoothly. Excessive speed and quick control movements without regard for conditions and circumstances are hazardous and could cause an accident.

Lift/Tilt Control

Moving the lift arm and tilting the attachment are accomplished by movement of the right T-Bar. To **raise** the lift arm, pull the control straight rearward; to **lower** the lift arm, push the control straight forward. To **tilt the attachment downward**, twist the control clockwise; to **tilt the attachment up** or back, twist the control counterclockwise.

Note: *The speed of the lift/tilt motion is directly proportional to the amount of T-Bar movement and engine speed.*

To place the lift arm into the detent (“float”) position, push the right T-Bar all the way forward into the detent. This position allows the lowered lift arm to “float” while traveling over changing ground conditions.

⚠ WARNING Never push the lift/tilt T-Bar control into the float position with the attachment loaded or raised, because this will cause the lift arm to lower rapidly.

Auxiliary Hydraulic System

Auxiliary hydraulics are used with an attachment that has a mechanism requiring hydraulic power of its own.

Important: *Always be sure the auxiliary hydraulic control is in neutral before starting the loader or removing the auxiliary hydraulic couplers.*

Figure 11 Auxiliary Couplers

A foot pedal is used to control the direction of oil flow.

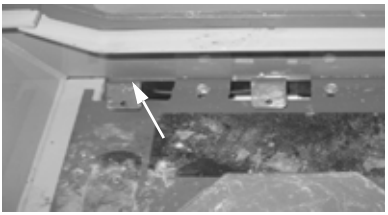


Figure 12 T-Bar Auxiliary Control

Attachment Mounting

The Gehl loader is equipped with a two-pin All-Tach® attachment bracket for mounting a bucket or other attachment. Two latch levers secure the attachment. Rotate the levers downward until they are horizontal to engage the latch pins. Rotate the levers upward until they are vertical to disengage the latch pins.

Figure 13 All-Tach® Bracket Mechanism (Hitch)

⚠ WARNING To prevent unexpected attachment release from the hitch, be sure to secure the lock pins by rotating the levers downward into a horizontal position and verifying that the pins are properly engaged.

CHAPTER 4

OPERATION

⚠ WARNING **Before starting the engine and operating the loader, review and comply with all safety recommendations in the *Safety* chapter of this manual. Know how to stop the loader before starting it. Also, be sure to fasten and properly adjust the seatbelt and lower the operator restraint bar.**

Before Starting the Engine

Before starting the engine and running the loader, refer to the *Controls and Safety Equipment* chapter and familiarize yourself with the various operating controls, indicators and safety devices on the loader.

Starting the Engine

The following procedure is recommended for starting the engine:

1. Carefully step up onto the back of the bucket or attachment and grasp the ROPS handholds to get into the operator's compartment.
2. Fasten the seatbelt and lower the restraint bar.
3. Verify the following:
   - the lift/tilt, drive and auxiliary controls are in their neutral positions,
   - the parking brake is on.
4. Push the throttle forward to half speed.

Note: *When the key is turned to the RUN position, an indicator will light on the instrument panel and a buzzer will sound momentarily to remind you to check that your seatbelt is fastened.*

5. Turn the keyswitch to the START position.

Important: *Do not engage the starter for longer than 15 seconds at a time. Longer use can overheat and damage the starter. Allow the starter to cool for 20 seconds between uses.*

After the engine starts, allow a sufficient warm-up time before attempting to operate the controls.

Important: *If the warning lights do not go off, stop the engine and investigate the cause.*

Cold Starting Procedure

⚠ WARNING Do not use starting fluid (ether) with preheat systems. An explosion can result, which can cause engine damage, injury or death.

Also see *Starting the Engine (*page 27). Turn the key switch to the "RUN" position.

Push the "Preheat" button (Figure 14) on the instrument panel to preheat the engine for a maximum of 30 seconds.

If the temperature is below 32°F (0°C) try the following to make starting the engine easier:

- Replace the engine oil with 5W30.
- Make sure the battery is fully charge.
- Install block or tank heater on the engine.

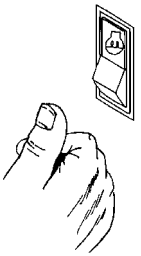


Figure 14 Preheat Button

Let the engine run for a minimum of 5 minutes to warm the engine and hydraulic fluid before operating the loader.

Stopping the Loader

The following procedure is the recommended sequence for stopping the loader:

1. Check that the drive control handle(s) is (are) in "neutral" position.
2. Lower the lift arm and rest the attachment on the ground.
3. Pull back the throttle lever to the low idle position (and remove foot from the accelerator pedal).
4. Turn the keyswitch to the OFF position to shut off the engine.
5. Move the lift/tilt control to verify that the safety interlock system is preventing movement.
6. Raise the restraint bar, unfasten the seatbelt and grasp the hand holds while climbing out of the operator's compartment.

Note: *The skid-steer loader is equipped with a spring-applied automatic parking brake. The parking brake is engaged when the operator lifts the restraint bar, leaves the operator's seat or shuts off the engine, or when the brake switch is applied.*

Parking the Loader

Park the loader on level ground away from traffic. If this is not possible, park the loader across the incline and block the tires to prevent movement.

Jump Starting the Engine

If the battery becomes discharged or does not have enough power to start the engine, use jumper cables and the following procedure to jump-start the loader engine.

⚠ WARNING **The ONLY safe method for jump starting with a discharged battery is for TWO PEOPLE to perform the following procedure. The second person removes the jumper cables so that the operator does not have to leave the operator's compartment with the engine running. NEVER make jumper cable connections directly to the starter solenoid of either engine. DO NOT start the engine from any position other than on the operator's seat and then ONLY after being sure ALL controls are in "neutral".**

Closely follow the procedure, in order, to avoid personal injury. In addition, wear safety glasses to protect your eyes and avoid leaning over the batteries while jump-starting.

DO NOT jump-start the battery if it is frozen, because it may rupture or explode.

Note: *BE SURE the jumper battery is a 12-volt D.C. battery.*

1. Turn the keyswitches of both vehicles to OFF, be sure the vehicles are in "neutral" and NOT touching each other.
2. Connect the positive (+) jumper cable to the positive (+) battery terminal on the disabled loader first. DO NOT allow the positive clamps to touch any metal other than the positive (+) battery terminals or the positive jump stud (if equipped.)
3. Connect the other end of the positive jumper cable to the jumper vehicle's battery positive (+) terminal.
4. Connect the negative (-) jumper cable to the jumper vehicle's battery negative (-) terminal.
5. Make the final negative (-) jumper cable connection to the disabled loader's engine block or loader frame (ground) – NOT to the disabled battery's negative post. If connected to the engine, keep the jumper clamp away from the battery, fuel lines and moving parts or the negative jump stud (if equipped.)
6. Start the loader. If it does not start at once, start the jumper vehicle engine to avoid excessive drain on the booster battery.
7. After the disabled loader is started and running smoothly, have the second person remove the jumper cables (negative (-) jumper cable first) from the jumper vehicle's battery and then from the disabled loader while being sure NOT to short the two cables together.

Allow sufficient time for the skid-steer loader alternator to build-up a charge in the battery before attempting to operate the loader or shut the engine off.

Changing Attachments

⚠ WARNING To prevent unexpected attachment release from the attachment bracket, be sure to properly secure the latch pins by rotating the latch levers to a horizontal position.

The skid-steer loader features an All-Tach® attaching bracket for mounting a bucket or other attachment. Two latch levers secure the attachment.

Connecting an Attachment

1. Rotate the latch levers to a vertical position to fully retract the latch pins.
2. Start the loader engine and make sure the lift arm is lowered and in contact with the loader frame.
3. Align the loader squarely with the back of the attachment.
4. Tilt the attachment bracket forward until the top edge of the bracket is below the flange on the back side of the attachment and centered between the vertical plates.

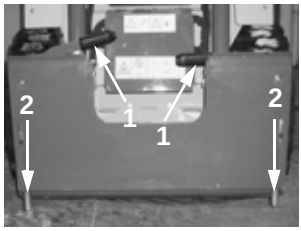


Figure 15 Hitch – disengaged
1. Latch Levers
2. Latch Pins

5. Slowly drive the loader forward and, at the same time, tilt the attachment bracket back to engage the flange on the back side of the attachment.
6. Stop forward travel when the flange is engaged, but continue to tilt the attachment bracket back to lift the attachment off the ground.
7. Exercise the MANDATORY SAFETY SHUTDOWN PROCEDURE (page 6).
8. With the loader engine OFF, leave the operator's compartment and rotate the latch levers to a horizontal position to fully engage the latch pins.

Important: *To check that the attachment is properly installed, apply down pressure to the attachment prior to operating.*

Connecting Auxiliary Hydraulic Couplings

Note: *With the engine OFF, key in the ON position and the restraint bar down, the auxiliary hydraulic control can be moved to relieve any pressure in the hydraulic system.*

The hydraulic couplers are located on the left lift arm. "A" port is pressure, "B" port is return when the auxiliary control is in the detent position.

Removing Attachments

1. Tilt the attachment bracket back until the attachment is off the ground.
2. Exercise the MANDATORY SAFETY SHUTDOWN PROCEDURE (page 6).
3. Relieve any hydraulic pressure in the auxiliary and attachment lines.
   a. Turn the key switch, but do not start the engine.
   b. With the restraint bar down, move the auxiliary hydraulic control back and forth. This will relieve the pressure in the hydraulic system.
4. With the engine OFF, leave the operator's compartment, disconnect the auxiliary hydraulic hoses and rotate the latch levers completely vertical to fully retract the latch pins.
5. Start the engine and be sure that the lift arm is fully lowered and in contact with the loader frame.
6. Tilt forward and slowly back the loader until the attachment is free from the loader.

Self-Leveling (optional)

The feature is designed to keep the attachment level while the lift arm is being raised.

Using a Bucket

⚠ WARNING Always maintain a safe distance from electric power lines and avoid contact with any electrically charged conductor or gas line. Accidental contact or rupture can result in electrocution or an explosion. Contact the "Digger's Hotline" or proper local authorities for utility line locations before starting to dig.

Driving Over Rough Terrain

When traveling over rough terrain, drive slowly with the bucket lowered.

Driving On an Inclin0

When traveling up or down on an incline, travel with the heavy end pointing uphill. Try to avoid traveling on an incline, but always travel with the bucket as low possible to maintain stability.

Loading a Bucket

Approach the pile with the lift arm fully lowered and the bucket tilted slightly forward until the edge contacts the ground. Drive forward, lifting the lift arm and tilting back the bucket to fill it. Back away from the pile.

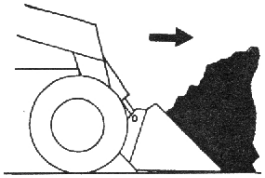


Figure 16 Loading

⚠ WARNING Always carry the loaded bucket with the lift arm resting on the loader frame. For additional stability when operating on inclines, always travel with the heavier end of the loader toward the top of the incline.

Digging with a Bucket

Approach the digging site with the lift arm slightly raised and the bucket tilted forward until the edge contacts the ground. Break the ground by driving forward and gradually lowering the lift arm.

With the bucket filled, tilt the bucket back, and back the loader away from the material. Rest the lift arm against the loader frame before proceeding to the dumping area.

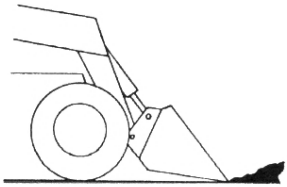


Figure 17 Digging

Dumping the Load onto a Pile

Carry a loaded bucket as low as possible until reaching the pile. Gradually stop forward motion and raise the lift arm high enough so that the bucket clears the top of the pile. Then slowly move the loader ahead, to position the bucket to dump the material on top of the pile. Empty the bucket and back the loader away while tilting the bucket back and lowering the lift arm.

⚠ WARNING Never push the controls into the float position with the bucket or attachment loaded or raised, because this will cause the lift arm to lower rapidly.

Dumping the Load Into a Box

Carry the loaded bucket low and approach the vehicle or bin. Stop your approach as close to the side of the box as possible while allowing for clearance to raise the lift arm and loaded bucket. Next, raise the lift arm until the bucket clears the top of the box and move the loader ahead, to position the bucket over the inside of the box, slowly dump the bucket. After the material is dumped, back away from the box while tilting the bucket back and lowering the lift arm.

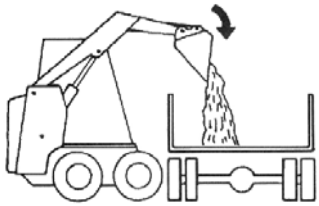


Figure 18 Dumping Into a Box

Dumping the Load Over an Embankment

WARNING **Do not drive too close to an excavation or ditch. Be sure the surrounding ground has adequate strength to support the weight of the loader and the load.**

Carry the loaded bucket as low as possible while traveling to the dumping area. Stop the loader where the bucket extends half-way over the edge of the embankment. Tilt the bucket forward and raise the lift arm to dump the material. After the material is dumped, back away from the embankment while tilting the bucket back and lowering the lift arm.

Scraping with a Bucket

For scraping, the loader should be operated in the forward direction. Position the lift arm down against the loader frame. Tilt the bucket cutting edge forward at a slight angle to the surface to be scraped. While traveling slowly forward with the bucket in this position, material can flow over the cutting edge and collect inside the bucket.

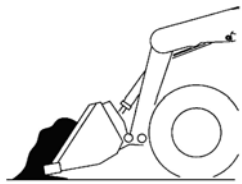


Figure 19 Scraping

Leveling the Ground

Drive the loader to the far edge of the area to be leveled. Tilt the bucket forward to place the bucket cutting edge at a 30 to 45 degree angle to the surface to be leveled. Then place the lift arm into the "float" position and drive the loader rearward dragging the dirt and, at the same time, leveling it.

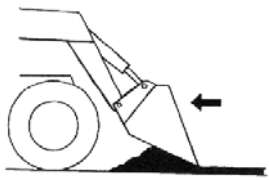


Figure 20 Leveling the Ground

Note: *The float (detent) position for T-Bar controlled loaders is reached by pushing the right handle all the way forward.*

⚠ WARNING **Check that the work area is clear of people and obstacles. Always look in the direction of travel.**

Highway Travel

If it becomes necessary to move the loader a long distance, obtain and use a properly rated trailer. For short distance highway travel, attach an SMV (Slow Moving Vehicle) emblem (purchased locally) to the back of the loader. For highway operation, obtain and install dual amber flashers or a strobe light. Check state and local laws and regulations.

Lifting the Loader

The loader can be lifted using the (optional) four-point lift kit.

⚠ WARNING

- **Before lifting, check the lift kit for proper installation.**
- **Never allow riders in the operator's compartment while the loader is lifted.**
- **Keep everyone a safe distance away from the loader while it is lifted.**
- **Loader may only be lifted with an empty bucket or empty pallet forks, or with no attachment. Never lift the loader with attachments other than those stated.**

Lift equipment used and its installation is the responsibility of the party conducting the lift. All rigging MUST comply with applicable regulations and guidelines.

1. Using suitable lift equipment, hook into the lift eyes. Adjust the length of the slings or chains to lift the loader level.

Note: *The loader my be slightly off level (10 degrees max.) when lifted.*

2. Center the hoist over the ROPS/FOPS. To prevent shock loading of the equipment and excessive swinging, slowly lift the loader off the ground. Perform all movements slowly and gradually. As needed, use a tag line to help position the loader and keeps it from swinging.

Storing the Loader

If the skid-steer loader is to be stored for a long period of time, the following procedure is suggested:

1. Fully inflate the tires.
2. Lubricate all grease zerks.
3. Check all fluid levels and replenish as necessary.

4. Add stabilizer to the fuel per the fuel supplier's recommendations.
5. Remove the battery, charge fully and store in a cool, dry location.
6. Protect against extreme weather conditions such as moisture, sunlight and temperature.

Transporting the Loader

⚠ WARNING **Park the truck or trailer on a level surface. Be sure the vehicle and its ramps have the weight capacity to support the loader. Make sure the vehicle surface and its ramps are clear of debris and slippery material that may reduce traction. Move the loader on and off the vehicle ramp slowly and carefully. Failure to follow these instructions could result in an overturn accident.**

Observe all local regulations governing the loading and transporting of equipment. Ensure that the hauling vehicle meets all safety requirements before loading the skid-steer loader.

1. Block the front and rear of the hauling vehicle's tires.
2. If the loader has an attachment, lift it slightly off the ground.
3. Back the loader slowly and carefully up the ramp onto the vehicle.
4. Lower the loader attachment to the vehicle deck, turn off the engine and remove the key.
5. Fasten the loader to the hauling vehicle at the points indicated by the tie-down decals.
6. Measure the clearance height of the loader and hauling vehicle. Post the clearance height in the cab of the vehicle.

Figure 21 Front Tie Down/Retrieval Point

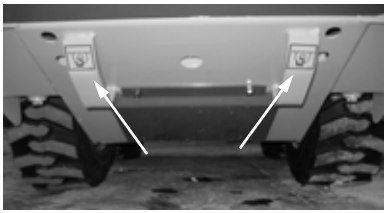


Figure 22 Rear Tie Down/ Retrieval Point

Notes

CHAPTER 5

SERVICE

⚠ WARNING Before servicing the machine, unless expressly instructed to the contrary, exercise the MANDATORY SAFETY SHUTDOWN PROCEDURE (page 6).

After service has been performed, be sure to restore all guards, shields and covers to their original positions before resuming loader operation.

This *Service* chapter details procedures for performing routine maintenance checks, adjustments and replacements. Most procedures are referred to in the *Troubleshooting* and *Maintenance Schedule* chapters of this manual. Refer to the separate engine manual provided for engine-related adjustments, lubrication and servicing procedures.

Note: *All service procedures, except those described under the "Dealer Services" topic are owner-operator responsibilities.*

Important: *More frequent service than the recommended intervals may be required under severe operating conditions. You must decide if your operation requires more service.*

Important: *Always dispose of waste lubricating oils and hydraulic fluids according to local regulations or take to a recycling center for disposal. Do not pour onto the ground or down the drain.*

Dealer Services

The following areas of component service, replacement and adjustments require special tools and knowledge for proper servicing and should be performed only by your authorized Gehl skid-steer loader dealer: hydrostatic components, hydraulic system gear pump, valves, cylinders, electrical components (other than the battery, circuit breakers).

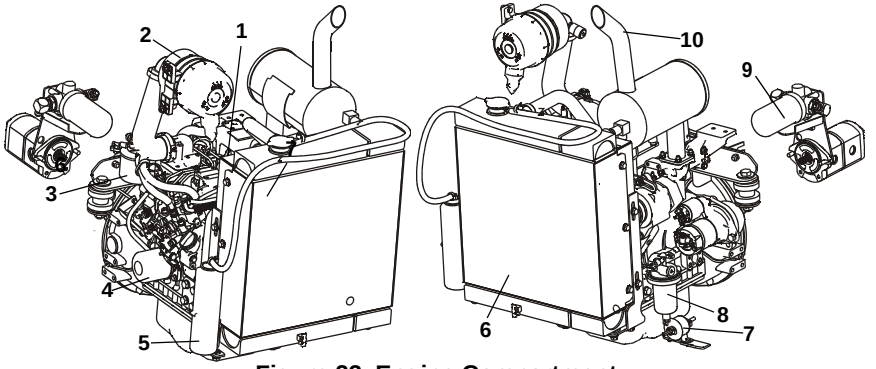


Figure 23 Engine Compartment

1. Engine Oil Dipstick
2. Air Cleaner
3. Fuel Filter
4. Engine Oil Filter
5. Coolant Recovery Tank
6. Radiator/Cooler
7. Fuel Pump
8. Water Trap
9. Hydraulic Oil Filter
10. Muffler

Tilting Back the ROPS/FOPS

For service, remove the two anchor bolts at the front of the ROPS/FOPS. Tilt the ROPS/FOPS back slowly, moving the control handles out of the way. A gas-charged spring helps tilt it back. A self-actuating lock mechanism engages to lock the ROPS/FOPS in a rolled-back position. To lower the ROPS/FOPS, apply upward force on it while pulling the lock mechanism handle toward the front of the loader. Lower the ROPS slowly onto the chassis, moving the control handles out of the way. Reinstall the anchor bolts, washers and locknuts.

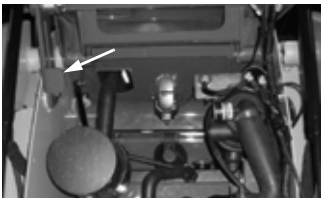


Figure 24 ROPS Lock Mechanism

WARNING **Never operate the loader with the ROPS/FOPS removed or locked back. Be sure the lock is securely engaged when the ROPS/FOPS is tilted back. Properly support the ROPS/FOPS when unlatching the lock mechanism and lowering the ROPS/FOPS. Be sure to reinstall the anchor bolts, washers and locknuts before resuming loader operation.**

Loader Raising Procedure

To raise the skid-steer loader so all four tires are off the ground, use the procedure below:

⚠ WARNING Do not rely on a jack or hoist to maintain the "raised" position without additional blocking and supports. Serious personal injury could result from improperly raising or blocking the skid-steer loader.

1. Using a jack or hoist capable of lifting the fully-equipped weight of the loader (with all attached options), lift the rear of the loader until the rear tires are off the ground.
2. Stack wooden blocks under the flat part of the loader chassis. They should run parallel with, but not touch, the rear tires (Figure 25).
3. Slowly lower the loader until its weight rests on the blocks. If the tires still touch the ground, raise the loader again, add more blocks and lower again.
4. Repeat Steps 1 through 3 for the front end. When the procedure is finished, all four tires will be off the ground so they can be removed.

Loader Lowering Procedure

When service or adjustment procedures are complete, the skid-steer loader can be taken down from the "raised" position. To lower the loader onto its tires:

1. Using a jack or hoist, raise the front of the loader until its weight no longer rests on the front blocks.
2. Carefully remove the blocking under the front of the loader.
3. Slowly lower the loader until the front tires are resting on the ground.
4. Repeat Steps 1 through 3 for the rear of the loader. When the procedure is finished, all four tires will be on the ground and the blocks removed from under the loader.

Figure 25 Blocked Loader

Replacement Parts

Part Description	Gehl Part No.
Air Cleaner Element, Primary	242541
Air Cleaner Element, Secondary	242540
Hydraulic Oil Filter Element	241216
Engine Oil Filter Element	195568
Fuel Filter Element	203888

Note: *Part numbers may change. Your Gehl dealer will always have the latest part numbers.*

Adjustments

Control Handles

The control handles do not require routine adjustment. Refer to the *Service Manual* for the initial setup procedure.

Fuel Sender

The fuel sender, located in the fuel tank, sends a signal to the fuel gauge indicating the amount of fuel left in the fuel tank.

Check the fuel sender periodically to ensure that the mounting screws are tight and that there is no fuel seepage around the gasket. If replacement is required, apply an RTV or gasket sealant around the gasket when restoring the fuel sender.

Engine Speed Control

The throttle cable does not require routine adjustment. Refer to the *Service Manual* for the initial setup procedure.

Besides throttle cable adjustment, the throttle lever friction pad pressure can be readjusted if the throttle lever does not hold its position. Belleville washers and a lock nut on the throttle lever are used for making this adjustment.

Drive Chains

The drive chains do not require routine adjustment. Refer to the *Service Manual* for the initial setup procedure.

Lubrication

Listed below are the locations, temperature ranges and types of recommended lubricants to be used when servicing this machine. Refer to the separate engine manual for more information regarding recommended engine lubricants, quantities required and grades.

Hydraulic System	Use Mobil DTE 15M or equivalent that contains anti-rust, anti-foam and anti-oxidation additives, and conforms to ISO VG46. **Capacity:** 8 U.S. gallons (30,0 liters)
Chaincases	Use SAE15W-40 motor oil. **Capacity** (each side): 8 U.S. quarts (7,6 liters)
Grease Fittings	Use lithium based grease
Engine	Below 32°F (0°C) – Use SAE Grade* 10 or 10W-30 Above 32°F (0°C) – Use SAE Grade* 15W-40 *Service Classification: API - CI-4/CJ-4 **Capacity:** 3-cylinder: 5.8 U.S. quarts (5,5 liters)

Refer to the following figure for grease fitting locations. Wipe dirt from the fittings before greasing them to prevent contamination. Replace any missing or damaged fittings. To minimize dirt build-up, avoid excessive greasing.

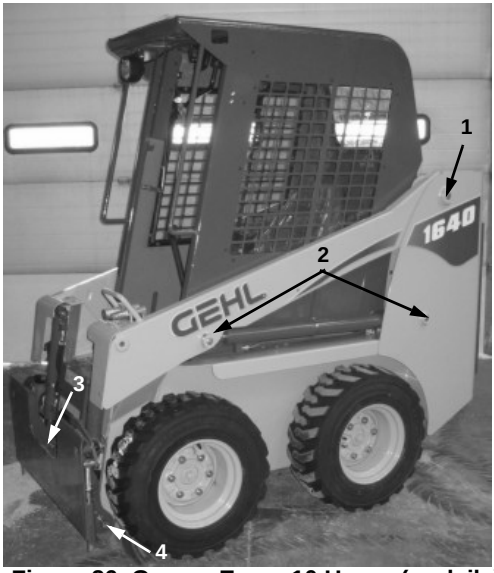


Figure 26 Grease Every 10 Hours (or daily)

1. Lift arm pivots (2)
2. Lift cylinder pivots (4)
3. Tilt cylinder pivots (2)
4. Attachment Bracket pivots (2)

Engine Air Cleaner

Important: *Failure to follow proper filter servicing instructions could result in catastrophic engine damage.*

The air cleaner consists of an outer (primary) filter element and an inner (secondary) filter element. An air filter restriction indicator for monitoring the condition of the elements is located on the right side of the front of the air cleaner. If the air filter becomes restricted, this indicator will turn red to warn the operator that the element(s) require service. Push the reset button located on the end of the indicator after fitting a clean element. For replacement elements, refer to the *Replacement Parts* topic (page 40).

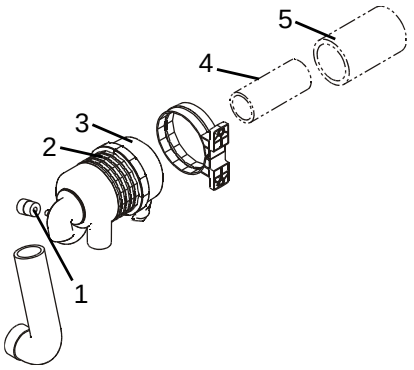


Figure 27 Dual-Element Air Cleaner
1. Restriction Indicator
2. Element Housing
3. Element Cover
4. Inner Filter Element
5. Outer Filter Element

Note: *Before replacing the filter element(s), push the reset button on the indicator. Start the engine and adjust the throttle to full speed. If the indicator does not turn red, do* ***not*** *replace the element(s).*

The outer element should be replaced only when the restriction indicator turns red. The inner element should be replaced every third time the outer element is replaced, unless the outer element is damaged or the inner element is dirty.

Along with a daily check of the restriction indicator, check the air cleaner intake hose and clamps, and the mounting bracket hardware to be sure they are properly tightened.

Access

1. Open the rear door and engine access cover.
2. Unlatch the clamps on the air cleaner and remove the cover. Clean out any dirt built up in the cover assembly.

Outer Element

1. Carefully pull the outer element out of the housing. Never remove the inner element unless it is to be replaced.
2. Clean out any dirt built up in the housing. Leave the inner element installed during this step to prevent debris from entering the engine intake manifold.
3. Replace the outer element.

Note: *Gehl does not recommend cleaning the outer element.*

4. Use a trouble light inside the outer element to inspect for spots, pinholes or ruptures. Replace the outer element if any damage is noted. The outer element must be replaced if it is oil- or soot-laden.

Inner Element

Note: *Replace the inner element only if it is dirty or if the outer element has been replaced three times.*

1. Before removing the inner element from the housing, clean out any dirt built up in the housing. Leave the inner element installed during this step to prevent debris from entering the engine intake manifold.
2. Remove the inner element.

Reinstallation

1. Check the inside of the housing for any damage that may interfere with the elements.
2. Be sure that the element sealing surfaces are clean.
3. Insert the element(s), making sure that they are seated properly.
4. Secure the cover to the housing with clamps.
5. Check the hose connections and be sure they are all clamped and tightened properly.
6. Reset the restriction indicator by pressing the reset button.

Engine Service

Check Engine Mounting Hardware

All bolts that secure the engine mounting brackets to the engine and the loader frame should be checked and re-tightened as necessary.

⚠ WARNING **Allow hot engine and hydraulic system components to cool before servicing.**

Checking Engine Oil Level

Important: *For new units, the initial oil change should be after the first 50 hours.*

Open the rear door and engine access cover. Pull out the dipstick and check the oil level. Markings on the dipstick represent FULL and LOW (add oil) levels.

Refer to the *Maintenance Interval Chart* (page 63) for the service interval for replacing the engine oil and filter.

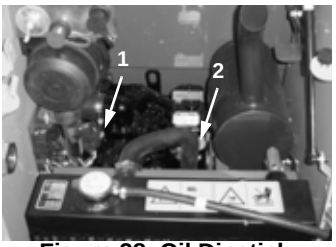


Figure 28 Oil Dipstick and Fill Cap

1. Oil Dipstick
2. Oil Fill Cap

Changing Engine Oil and Filter

Figure 29 Rear Belly Pan

1. Run the engine until it is at operating temperature. Stop the engine. Remove the rear belly pan.
2. Remove the drain plug.
3. From the engine compartment, remove the oil filter. Clean the filter sealing surface.
4. Put clean oil on the new oil filter gasket. Install the filter and tighten 3/4 of a turn past the point where the gasket contacts the filter head.
5. Reinstall and tighten the drain plug.
6. Remove the oil cap and add the recommended oil. Refer to the “Lubrication” topic in this chapter for oil specifications and capacities.
7. Start the engine and let it run for several minutes at low idle. Stop the engine. Check for leaks at the oil filter, drain plug and remote oil drain hose. Check the oil level. Add oil if it is not at the top mark on the dipstick.

For a replacement element, refer to the *Replacement Parts* topic (page 40).

Changing Fuel Filter

The engine has a fuel filter located on the left side of the engine. To change it:

1. Shut off the fuel supply by turning the fuel shutoff valve on top of the water trap.
2. Shut off return line by turning valve on the fuel tank.
3. Remove the fuel filter element.
4. Lubricate new fuel filter element gasket with diesel fuel.
5. Install and tighten the filter element one-half turn past point the where the gasket contacts the filter head.
6. Turn shutoff valve on water separator to ON.
7. Turn on the fuel supply at fuel tank.

The engine is self-priming. To remove air before starting, turn the ignition key to the ON position for 30 seconds.

For a replacement element, refer to the *Replacement Parts* topic (page 40).

Servicing Water Separator

Periodically check for water in water separator by checking level of float in water separator bowl. If water is present:

1. Shut off the fuel supply by turning the fuel shutoff valve on top of the water separator.
2. Turn nut to release the bowl from the valve head. Dispose remaining fuel and water.
3. Clean bowl and filter element with warm water until all foreign material is removed. Replace fuel filter if damaged. Refer to Parts Manual for part number.
4. Place element onto valve head. Lubricate o-ring on bowl with diesel fuel and place on valve head. Turn nut to tighten.
5. Turn on fuel supply.

Releasing Water from Separator

1. Check red float located in the water separator bowl. If red float is raised, open valve on the bottom of the bowl to drain water.
2. Close valve quickly after float reaches the bottom of the bowl.

Spark Arrestor Muffler

Important: *The loader is factory-equipped with a spark arrestor type muffler. Muffler maintenance is required to keep it in working condition. Refer to local laws and regulations for spark arrestor requirements.*

1. Stop the engine, open the rear door and engine cover.
2. Remove the plug from the bottom of the muffler.
3. Block the outlet of the muffler with a non-combustible material.
4. Start the engine and run it for 10-15 seconds.
5. Stop the engine and remove the blockage.
6. Put anti-seize coating on the plug.
7. Reinstall and tighten the plug.

Alternator/Fan Belt

Refer to the separate engine manual for setting proper belt tension. If the belt is worn, cracked or otherwise deteriorated, replace the belt by following the procedure in the separate engine manual.

Checking Hydraulic Oil Level

The loader has a sight gage in the engine compartment. Check the fluid level with the lift arm lowered and the attachment on the ground.

When hydraulic fluid is required, allow the system to cool. Slowly remove the oil fill cap, allowing the pressure to release before removing the cap completely.

Add hydraulic fluid as required. Refer to the *Lubrication* topic (page 41) for oil recommendations. Replace the cap.

Figure 30 Hydraulic Oil Service

Changing Hydraulic Oil Filter

1. Raise ROPS/FOPS to access the filter. Unscrew the filter.
2. Place oil pan under loader to catch the oil.
3. Unscrew the filter.
4. Clean the surface of the filter housing where the element seal contacts the housing. Put clean oil on the rubber gasket of the new filter element.
5. Install and tighten the filter element 3/4 of a turn past the point where the gasket contacts the filter head.

Figure 31 Drain Plug

6. For a replacement element, refer to the *Replacement Parts* topic (page 40).

Changing Hydraulic Oil

The hydraulic oil must be replaced if it becomes contaminated, after major repairs, and after 1000 hours or one year of use.

1. Remove the oil filler cap.
2. Install a catch pan of sufficient capacity under the oil reservoir (8 gallons [30 liters])
3. Remove the drain plug located on the bottom left of the oil reservoir.
4. Remove and replace the hydraulic oil filter.
5. Reinstall the drain plug.
6. Refill the reservoir until the oil is between the two lines on the dipstick gauge.
7. Start the engine and operate the hydraulic controls.
8. Stop the engine and check for leaks at the filter and reservoir drain plug.
9. Check the fluid level and add fluid if needed.

Cooling Systems

Important: *Check the cooling system every day to prevent overheating, loss of performance or engine damage.*

Checking Coolant Level

1. Open the rear door. Check the coolant level in the coolant recovery tank on the inside of the rear door. The coolant recovery tank must be 1/3 to 1/2 full with a cold engine and 2/3 to 3/4 full with a hot engine.
2. Allow the coolant to cool. Do not remove the cap when the coolant is hot. Serious burns may occur.
3. Add premixed coolant, 50% water and 50% ethylene glycol, to the recovery tank if the coolant level is low.

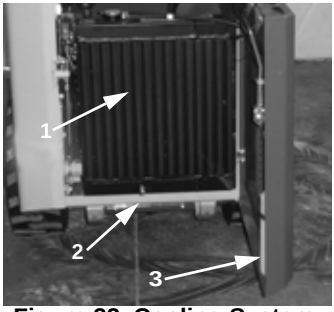


Figure 32 Cooling System
1. Radiator/Cooler
2. Recovery Tank
3. Drain Plug

Cleaning Cooling System

1. Park the loader on a level surface, lower the lift arm and stop the engine. Allow the engine to cool.
2. Open the rear door. Lift the engine cover.
3. Clean the radiator and oil cooler by blowing through the fins with high pressure water or air.

Draining/Flushing Cooling System

1. Open the rear door. Lift the engine cover.
2. Slowly remove the radiator cap, allowing pressure to release before removing completely.

⚠ WARNING **Liquid cooling systems build up pressure as the engine becomes hot. Before removing the radiator cap, stop the engine and let the system cool. Remove the radiator cap only after the coolant has cooled. Remove the cap slowly or severe burns may result.**

3. Remove the drain plug and drain the coolant into a suitable container.
4. Replace the drain plug.

Note: *Protect the cooling system by adding premixed 50% water and 50% ethylene glycol to the system. This mixture will protect the cooling system to -34°F (-36°C).*

5. Fill the radiator fully and the recovery tank half full with the premixed coolant.
6. Reinstall the radiator cap.
7. Run the engine until it is at operating temperature. Stop the engine and let it cool. Check the coolant level. Add more coolant if required.

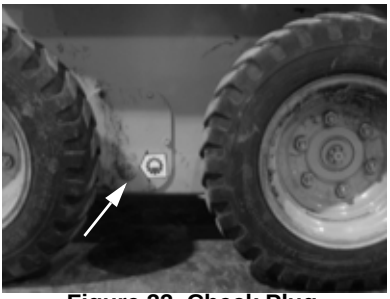


Figure 33 Check Plug

Chaincases

The chaincase contains the drive sprockets and drive chains. There are two plugs in each chaincase. One is to drain the fluid and the other is to check the fluid level. Refer to the *Maintenance Schedule* chapter (page 63) for change intervals. Refer to the *Lubrication* topic (page 41) for information on oil type and quantity.

Figure 34 Drain Plugs

Checking and Adding Oil

1. Park the loader on a level surface. Stop the engine.
2. Remove the check plug from each chaincase housing. If the oil can be reached with the tip of your finger, the oil level is adequate.
3. If the level is low, add fluid through the check plug until the oil level reaches the edge of the hole. Reinstall the check plug.

Draining Oil

1. Raise the rear of the machine to aid in draining the chaincases.
2. Remove the drain plug on each chaincase and drain the oil into a suitable container.
3. Reinstall and tighten the drain plugs.
4. Refill the chaincases at the check plugs.

Seat and Restraint Bar Switches

Electrical switches in the seat and restraint bar must be closed (operator sitting in the seat and restraint bar lowered) and the auxiliary hydraulics must be in neutral to complete the circuit and start the engine.

Bucket Cutting Edge

The bucket cutting edge should be replaced when it is worn to within 1 in. (25 mm) of the bucket body.

Wheel Nuts

Wheel nut torque must be checked before initial operation and every two hours thereafter until the wheel mounting hardware torque stabilizes at the recommended setting of 120-130 ft-lbs (161-175 N·m). When tires are removed and replaced, this procedure must be repeated.

Tires

Rear tires usually wear faster than the front ones. To keep tire wear even, rotate the tires from front to rear and rear to front.

It is important to keep the same size tire on each side of the loader to prevent excessive wear on tires or other damage. If different sizes are used, each tire will be turning at different speeds, causing excessive wear.

The tread bar of all tires must face the same direction.

Mounting Tires

⚠ WARNING Inflating or servicing tires can be dangerous. When possible, trained personnel should service and mount tires. To avoid possible death or serious injury, follow the safety precautions below.

1. Be sure the rim is clean and free of rust.
2. Lubricate the tire beads and rim flanges with a soap solution. Do not use oil or grease.
3. Use a clip-on tire chuck with remote hose and gauge, allowing you to stand clear while inflating the tire. Do not place your fingers on the tire bead or rim during inflation.
4. Never inflate beyond 35 psi (240 kPa) to seat the beads. If the beads have not seated by the time the pressure reaches 35 psi (240 kPa), deflate the assembly, reposition the tire on the rim, lubricate both parts and re-inflate. Inflation pressure beyond 35 psi (240 kPa) with unseated beads may break the bead or rim with explosive force sufficient to cause death or serious injury.
5. After seating the beads, adjust the inflation pressure to the recommended operating pressure.
6. Do not weld, braze or otherwise attempt to repair and use a damaged rim.

Checking Tire Pressure

Tire Size	Inflation Pressure	
	psi	kPa
23 x 8.5x–12 6-ply Heavy-Duty Flotation	60	414
5.70x–12 4-ply Chevron	50	345

Correct tire pressure should be maintained for all tires to enhance operating stability and extend tire life. Refer to the above chart for the proper inflation pressure.

When installing tires, be sure they are the same size and style on each side of the loader. Always replace tires with the same size as the original equipment.

Electrical System

Circuit Breakers

The circuit breakers for the loader are located on the rear right panel. There is also a 35-amp main circuit breaker located on the left side of the engine compartment, directly behind the ROPS/FOPS.

Battery

WARNING **Before servicing the battery or electrical system, be sure the battery disconnect switch (if equipped) is in the "OFF" position. If not equipped with a disconnect switch, disconnect the ground (-) terminal from battery.**

The battery on the loader is a 12-volt, wet-cell battery. To access the battery, remove front floor panel.

The battery top must be kept clean. Clean it with an alkaline solution (ammonia or baking soda and water). After foaming has stopped, flush the battery top with clean water. If the terminals and cable connection clamps are corroded or have a build-up, disconnect the cables and clean the terminals and clamps with the same alkaline solution.

WARNING **Explosive gas is produced while a battery is in use or being charged. Keep flames or sparks away from the battery area. ALWAYS charge the battery in a well-ventilated area.**

Never lay a metal object on top of a battery, because a short circuit can result.

Battery acid is harmful on contact with skin or fabrics. If acid spills, follow these first-aid tips:

1. **Immediately remove any clothing on which acid spills.**
2. **If acid contacts the skin, rinse the affected area with running water for 10 to 15 minutes.**
3. **If acid contacts the eyes, flood the eyes with running water for 10 to 15 minutes. See a doctor at once. Never use any medication or eye drops unless prescribed by the doctor.**
4. **To neutralize acid spilled on the floor, use one of the following mixtures:**
   a. **1 pound (0.5 kg) of baking soda in 1 gallon (4 L) of water**
   b. **1 pint (0.5 L) of household ammonia in 1 gallon (4 L) of water**

Whenever the battery is removed, be sure to disconnect the negative (-) battery terminal connection first.

Notes

TROUBLESHOOTING

Electrical System

Problem	Possible Cause	Remedy
Entire electrical system does not function.	Battery disconnect switch is OFF.	Turn battery disconnect switch to ON.
	15-ampere breakers tripped.	Check circuit and locate trouble before resetting breaker.
	Main wiring harness connectors at rear of ROPS not properly plugged in.	Check main harness connectors.
	Battery terminals or cables are loose or corroded.	Clean battery terminals and cables and retighten them.
	Battery is faulty.	Test battery and replace as needed.
No instrument panel lamps with keyswitch turned to "ON."	25 ampere breakers are tripped.	Check circuit and locate trouble before resetting breaker.
	Battery terminals or cables are loose or corroded.	Clean battery terminals and cables and retighten them.
Seatbelt buzzer not sounding when key turned to "ON," indicator lamps work properly.	Buzzer is disconnected.	Reconnect wires to buzzer.
	Faulty buzzer.	Replace buzzer.
Fuel gauge does not work.	Faulty fuel gauge sender.	Replace fuel gauge sender.
	Faulty fuel gauge.	Replace fuel gauge.
	Loose wiring/terminal connections.	Verify wiring connections.
Engine temperature gauge does not work.	Faulty temperature sender.	Replace temperature sender.
	Faulty temperature gauge.	Replace temperature gauge.
	Loose wiring/terminal connections.	Verify wiring connections.
Hourmeter does not work.	Loose wiring/terminal connections.	Verify wiring connections.
	Faulty alternator.	Repair the alternator.
	Faulty hour meter.	Replace hour meter.

Electrical System

Problem	Possible Cause	Remedy
Starter will not engage when key is turned to START.	Seat, restraint bar switch or neutral auxiliary hydraulics is malfunctioning or not activated.	Replace switches as needed. If engine still doesn't start, contact your dealer.
	Poor connections to starter relay in instrument panel.	Verify relay connections.
	Battery terminals or cables loose or corroded.	Clean terminals, cables and retighten.
	Faulty starter relay in instrument panel.	Contact your dealer.
	Battery discharged or defective.	Recharge or replace battery.
	Starter solenoid not functioning.	Troubleshoot circuit. Replace the starter solenoid.
	Ignition wiring, seat switch, restraint bar switch, etc. loose or disconnected.	Check wiring for poor connections, broken leads; repair wiring or connection.
	Starter or pinion faulty.	Remove starter; repair/replace as needed.
Work lights not functioning properly.	Single light doesn't work: Light bulb burned out, faulty wiring.	Check and replace light bulb as needed. Check wiring connection to light.
	No lights at all; circuit breaker tripped.	Check circuit and locate trouble before replacing fuse.
	Faulty light switch or poor ground.	Replace light switch. Check ground wire connections.
Lift/Tilt and/or drive lock solenoids do not work.	Wiring to solenoids disconnected or faulty.	Troubleshoot circuit, repair.
	Faulty seat or restraint bar switch.	Contact your dealer.
	Faulty solenoid valve coil.	Contact your dealer.
	Faulty hydraulic solenoid relay in instrument panel.	Contact your dealer.

Engine

Problem	Possible Cause	Remedy
Engine turns over but will not start.	Engine cranking speed too slow.	Battery requires recharging or replacing, or, in cold temperatures, pre-warm the engine.
	Auxiliary hydraulics valve engaged.	Return control valves to neutral.
	Fuel tank empty or faulty fuel gauge sender.	Refill fuel tank. Replace fuel gauge sender.
	Glow plug module malfunctioning.	Check connection and voltage, replace as needed.
	Fuel shut-off solenoid not energizing.	Check electrical connections and voltage to shut-off solenoid.
	Engine oil not warm enough.	Install a pan or block heater.
	Ambient temperature is too low.	Install a pan or block heater.
	Fuel pump not working.	Contact your dealer.
Engine overheats.	Crankcase oil level too low or too high.	Add or remove oil as required.
	Fan air circulation blocked or restricted.	With engine OFF, remove blockage or restriction.
	Fan shroud improperly positioned.	Contact your dealer.
	Grade of oil improper or excessively dirty.	Drain and replace with proper grade new oil.
	Exhaust restricted.	Allow exhaust to cool, remove restriction.
	Air filter is restricted.	Replace the filter(s).

Hydrostatic System

Problem	Possible Cause	Remedy
No response from either hydrostatic drive or the lift/tilt systems.	Hydraulic oil viscosity is too heavy.	Allow longer warm-up or replace existing oil with the proper viscosity oil.
	Hydraulic oil supply is too low.	Check for low oil level in reservoir. Add oil.
	Drive coupling failure.	Replace the coupling.
Traction drive will not operate in either direction.	Parking brake is engaged.	Disengage parking brake.
	Hydraulic oil supply is low.	Check for low oil level in reservoir. Add oil.
	Control rod linkage disconnected.	Check linkage connection at control levers and neutral centering mechanisms. Reconnect linkage.
	Low or no charge pressure.	Contact your dealer.
	Hydrostatic pump(s) relief valves are malfunctioning.	Contact your dealer.
Sluggish response to acceleration.	Air in hydraulic system.	Cycle lift and tilt cylinders to maximum stroke and maintain pressure for a short time to clear air from system. Also check for low oil level in reservoir, fill as needed.
	Automatic parking brake partially engaged.	Contact your dealer.
	Hydraulic oil supply is too low.	Check for low oil level in reservoir. Add oil.
	Low hydrostatic system charge pressure.	Contact your dealer.
	Drive motor(s) or hydrostatic pump(s) have internal damage or leakage.	Contact your dealer.

Hydrostatic System

Problem	Possible Cause	Remedy
Hydrostatic drive is overheating.	Drive system overloaded continuously.	Improve efficiency of operation.
	Lift/tilt or auxiliary system overloaded continuously.	Improve efficiency of operation.
	Drive motor(s) or hydrostatic pump(s) have internal damage or leakage.	Contact your dealer.
	Oil cooler fins plugged with debris.	Clean oil cooler fins.
	Loader being operated in a high temperature area with no air circulation.	Reduce duty cycle; improve air circulation.

Hydrostatic System

Problem	Possible Cause	Remedy
Hydrostatic (drive) system is noisy.	Hydraulic oil viscosity is too heavy.	Allow longer warm-up or replace existing oil with the proper viscosity oil.
	Air in hydraulic system.	Cycle lift and tilt cylinders to maximum stroke and maintain pressure for a short time to clear air from system. Also check for low oil level in reservoir, fill as needed.
	Drive motor(s) or hydrostatic pump(s) have internal damage or leakage.	Contact your dealer.
Right side doesn't drive in either direction. Left side operates normally.	Relief valves on rear hydrostatic pump malfunctioning.	Contact your dealer.
	Control rod linkage to rear hydrostatic pump disconnected.	Attach control rod linkage.
Right side doesn't drive in forward direction.	Relief valve on rear hydrostatic pump is malfunctioning.	Contact your dealer.
	Rear hydrostatic pump malfunctioning.	Contact your dealer.
Left side doesn't drive in either direction. Right side operates normally.	Relief valves on front hydrostatic pump malfunctioning.	Contact your dealer.
	Control rod linkage to front hydrostatic pump disconnected.	Attach control rod linkage.
Left side doesn't drive in one direction.	Relief valve on front hydrostatic pump is malfunctioning.	Contact your dealer.
	Front hydrostatic pump malfunctioning.	Contact your dealer.

Hydraulic System

Problem	Possible Cause	Remedy
Lift/Tilt controls fail to respond.	Hydraulic oil viscosity is too heavy.	Allow longer warm-up or replace with proper viscosity oil.
	Hydraulic oil level is low.	Check oil level in reservoir. If oil is low, check for an external leak. Repair and add oil.
	Solenoid valve(s) malfunctioning.	Check electrical connections to lift solenoid and repair.
	Restraint bar or seat switch malfunction.	Check switches.
Auxiliary hydraulics do not function.	Restraint bar is raised.	Lower the restraint bar.
	Lock solenoid malfunctioning	Check electrical connections to lock solenoid and repair connections as needed. If lock solenoid is still not functioning properly, contact your dealer.
	Restraint bar switch malfunctioning.	Check electrical connections to restraint bar switch and repair connections as needed. If switch is still not functioning properly, contact your dealer.
Hydraulic cylinder action is slow for lift and/or tilt functions.	Low engine speed.	Operate engine at higher speed.
	Hydraulic oil viscosity is too heavy.	Allow longer warm-up or replace existing oil with proper viscosity oil.
	Control linkage is restricted.	Check for control linkage restriction and adjust.
	Hydraulic oil leaking past cylinder piston seals.	Contact your dealer.
	Worn gear pump.	Contact your dealer.
	Solenoid valve(s) malfunctioning.	Check electrical connections to lift solenoid and repair connections as needed. If lift solenoid valve is still not functioning properly, contact your dealer.
	Relief valve in control valve not functioning correctly. (Squealing noise should be evident while operating.)	Contact your dealer.

Hydraulic System

Problem	Possible Cause	Remedy
Jerky lift arm and bucket action.	Seat or restraint bar switch malfunction.	Check electrical connections to the switches. Replace as needed.
	Air in the hydraulic system.	Cycle lift/tilt cylinders to maximum stroke and maintain pressure for short time to clear air from system.
	Oil in hydraulic reservoir is low.	Check and add oil.
Bucket drifts downward with tilt control in neutral.	Oil leaking past tilt cylinder seals (internal or external).	Contact your dealer.
	Self-leveling valve is malfunctioning.	Contact your dealer.
	Leaking hydraulic hoses, tubes, or fittings between control valve and cylinders.	Inspect hoses and tubes, tighten fittings. Replace hoses or tubes as needed.
No down pressure on the bucket.	Control valve in float position.	Take control out of float position.
	Tilt cylinders are malfunctioning.	Contact your dealer.
	Relief valve in control valve not functioning properly. (Squealing noise should be evident while operating.)	Contact your dealer.
Bucket will not tilt, lift arms work properly.	Tilt solenoid valve malfunctioning.	Check electrical connections to tilt solenoid and repair connections as needed. If tilt solenoid valves are still not functioning properly, contact your dealer.
	Tilt spool in control valve not actuated or leaking.	Check valve control linkage and/or tube connections to valve.
Lift arm does not raise, bucket tilt works properly.	Lift solenoid valve could be malfunctioning.	Check electrical connections to lift solenoid and repair connections as needed. If lift solenoid valve is still not functioning properly, contact your dealer.
	Lift spool in control valve not actuated or leaking.	Contact your dealer.

Hydraulic System

Problem	Possible Cause	Remedy
Lift arm doesn't maintain raised position with lift control in NEUTRAL.	Oil leaking past lift cylinder seals (internal or external).	Contact your dealer.
	Oil leaking past lift spool in control valve.	Contact your dealer.
	Self-leveling valve malfunctioning.	Contact your dealer.
	Leaking hydraulic hoses, tubes or fittings between control valve and cylinders.	Inspect hoses and tubes, tighten fittings as needed. Replace as needed.
Lift arm will not lower or raise.	Lift arm support device engaged.	Raise lift arm and disengage support device.
	Lift solenoid valve malfunctioning.	Check electrical connections to solenoid. Repair or replace as needed.
	Restraint bar not lowered.	Lower restraint bar.
	Seat or restraint bar switch malfunction.	Check electrical connections to the switch. Replace switch as needed.

Notes

CHAPTER 7

MAINTENANCE SCHEDULE

This Maintenance Interval Chart was developed to match the *Service* chapter of this manual. Detailed information on each service procedure can be found in the *Service* chapter. A Maintenance Log follows the chart for recording the maintenance performed. Recording the 10-hour (or daily) service intervals would be impractical and is therefore not recommended.

Important: *Under severe operating conditions, more frequent service than the recommended intervals may be required. You must decide, based on your use, if your operation requires more frequent service.*

Maintenance Interval Chart

Service Procedure	Maximum Interval		
	10 Hours (or Daily)	250 Hours	500 Hours (or Yearly)
Check Engine Air Cleaner Restriction Indicator (page 42)	●		
Check Engine Oil Level (page 43)	●		
Check Hydraulic Oil Level (page 46)	●		
Check Tire Pressures (page 50)	●		
Grease Lift Arm, Hitch and Cylinder Pivots (page 41)	●		
Check Bucket Cutting Edge (page 45)	●		
Check Seat and Restraint Bar Operation (page 48)	●		
Check Coolant Level (page 47)	●		
Clean Cooling System (page 47)		●	
Check Wheel Nuts Torque (page 49)	❍	●	
Check Oil Level in Chaincases (page 48)		●	
Clean Spark Arrestor Muffler (page 45)		●	
Check Alternator/Fan Belt Tensions (page 45)		●	
Change Engine Oil and Filter (page 44)	□		●
Change Hydraulic Oil Filter (page 46)	□	●	
Check Battery (page 51)			●
Check Engine Mounting Hardware (page 43)			●
Change Fuel Filters (page 44)			●
Change Hydraulic Oil (page 46)			◆
Change Chaincase Oil (page 48)	□		◆
Drain/Flush Cooling System (page 47)			●

❍ Perform the initial procedure at 2 hours then at "●" intervals.

□ Perform the initial procedure at 50 hours then at "●" intervals.

◆ Perform the maintenance at 1000 hours.

Maintenance Log

Date	Hours	Service Procedure

Maintenance Log

Date	Hours	Service Procedure

Notes

CHAPTER 8

SPECIFICATIONS

Loader Specifications

Specification	1640E/1640E (EU)
Operating Weight[1]	2980 lbs. (1352 kg)
Shipping Weight	2820 lbs. (1279 kg)
Rated Operating Capacity[2]	850 lbs. (386 kg)
Engine Make	Yanmar
Model	3TNV 82
Displacement	81.2 in^3 (1,33 L)
Power (net)	23.9 hp (17.8 kW) @ 2400 rpm
Peak Torque	68 ft.-lbs. (86 N·m) @ 1200 rpm
Hydraulic System (theoretical)	
Hydraulic System Pressure	2255 psi (156 bar)
Auxiliary Hydraulics-Flow Rating	10.1 gpm (38,2 L/min)
Electrical	
Battery	12-Volt DC, 675 CCA
Starter	Electric
Alternator	40 Amperes
Capacities	
Chaincase (each)	6 U.S. qts. (5,7 L)
Crankcase	5.8 U.S. qts. (5,5 L)
Fuel Tank	7.7 U.S. gal. (29,1 L)
Hydraulic Reservoir	7.2 U.S. gal. (27,2 L)
Sound Levels (with Deluxe Sound Kit)	
Sound Pressure (Operator Ear)	80 dB(A)
Sound Power (Environmental)	101 dB(A)

1. Weight of base unit with standard equipment, 5.70 tires, 5.3ft^3 (0.15m^3) bucket and 175 lbs. (79kg) operator.
2. Rated Operating Capacity per SAE J818 and ISO 14397.

Standard Features

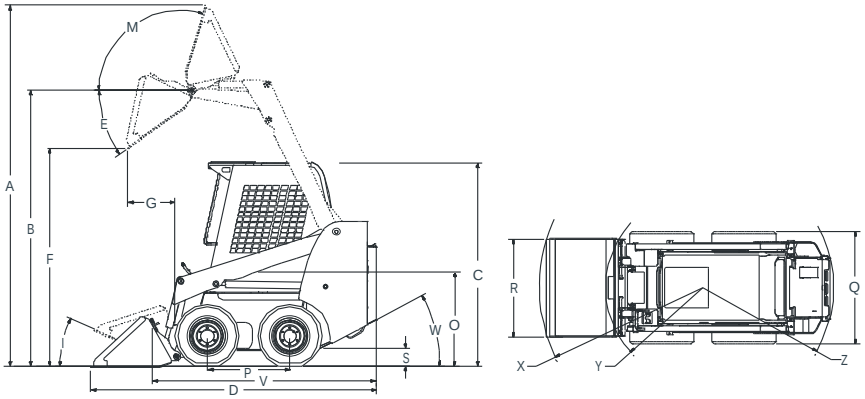
- T-Bar Controls
- Fuel Gauge
- All-Tach® Attachment System (Universal-Type)
- Warning Lamps and Buzzer – Engine and Hydraulic Oil Temperature
- Battery Charge Indicator Lamp
- Low Oil Pressure Light and Buzzer
- Seatbelt Indicator Lamp and Buzzer
- Coolant Temperature Gauge
- Hourmeter
- Manual-Control Hydrostatic Drive
- ROPS/FOPS - Level II – Overhead Guard
- Independent Hydraulic Reservoir and Hydraulic Oil Cooler
- Foot and Hand Throttles
- Operator Restraint Bar
- Glow Plug Starting Assist (Manual)
- Adjustable Seatbelt
- Lift Arm Support Device
- Hydraloc™ System – Brakes and Interlock for Starter, Lift/Tilt Cylinders, Auxiliary Hydraulics, and Wheel Drives
- Front and Rear Work Lights
- Removable Belly Plate and Access Cover
- Dual-Element Air Cleaner with Visual Indicator
- Vandalism Lock Provisions
- Top and Rear Windows
- Spark Arrestor Muffler
- Headliner and Acoustical Interior
- Adjustable Seat
- Front Auxiliary Hydraulics with 3/4-inch Flat-Faced Couplers
- Number 60HK Drive Chain
- Powerview® Lift Arm
- Visual Hydraulic Filter Indicator
- Power Plug (12-V)
- Side Windows

Optional Features

- Audible Back-Up Alarm
- Engine Block Heater
- Horn*
- Suspension Seat
- Cab Door with Wiper
- Heater/Defroster
- 3-inch Wide Seatbelt – When Required by Law
- Rear View Mirror
- Interior Dome Light
- Centrifugal Pre-Cleaner
- Strobe Light
- Impact-Resistant Door
- Four-Point Lift Kit
- Battery Disconnect Switch*
- Bucket Bolt-On Cutting Edge
- Diesel Engine Exhaust Purifier
- Self-Leveling Lift Action
- EU Sound Kit

* Included in EU kit

Dimensional Specifications



SL1640E & SL1640E (EU)		36.0/44.0 inch D/C Bucket w/ 5.70 x 12 Tires	
		inches	mm
A	Overall Operation Height – Fully Raised	124.7	3167
B	Height to Hinge Pin – Fully Raised	96	2438
C	Overall Height – to ROPS	74.7	1897
D	Overall Length – Bucket Down	101.4	2576
E	Dump Angle at Full Height	45.9°	
F	Dump Height	72.3	1836
G	Dump Reach – Bucket Full Height	14.8	376
J	Rollback at Ground	23.4°	
M	Rollback Angle at Full Height	100.3	
O	Seat to Ground Height	34.6	879
P	Wheelbase – Nominal	30.5	775
Q	Overall Width – Less Bucket	35.8	909
R	Bucket Width – Overall	36/44	914/1118
S	Ground Clearance – to Chassis (Between Wheels)	5.9	150
V	Overall Length (Less Bucket)	75	1905
W	Departure Angle	30.1°	
X	Clearance Circle – Front (With Bucket)	58	1473
Y	Clearance Circle – Front (Less Bucket)	32.8	833
Z	Clearance Circle – Rear	43.2	1097

Capacities and Ratings

Note: *Use the Table of Common Materials and Densities (page 71) for selecting the appropriate bucket.*

Dirt/Construction Buckets		
Description	**Weight**	**Rated Operating Capacity SL1640E**
36 in./5.3 ft³ (914 mm/0.15 m³)	133 lbs. (60 kg)	850 lbs. (386 kg)
44 in./7.4 ft³ (1118 mm/0.21 m³)	161 lbs. (73 kg)	830 lbs. (376 kg)
Utility Buckets		
48 in./9.8 ft³ (1219 mm/0.28 m³)	315 lbs. (143 kg)	730 lbs. (331 kg)
Pallet Forks		
15.74in. (400 mm) Forks with Backrest Rating per EN474-3	248 lbs. (112 kg)	610 lbs. (227 kg)
19.68in. (500 mm) Forks with Backrest Rating per EN474-3	248 lbs. (112 kg)	570 lbs. (259 kg)
24in. (670 mm) Forks with Backrest Rating per SAE J1197	248 lbs. (112 kg)	510 lbs. (231 kg)

Table of Common Materials and Densities

Material	Density	
	lbs/ft³	kg/m³
Ashes	35-50	560-800
Brick-common	112	1792
Cement	110	1760
Charcoal	23	368
Clay, wet-dry	80-100	1280-1600
Coal	53-63	848-1008
Concrete	115	1840
Cinders	50	800
Coal-anthracite	94	1504
Coke	30	480
Earth-dry loam	70-90	1121-1442
Earth-wet loam	80-100	1281-1602
Granite	93-111	1488-1776
Gravel-dry	100	1602
Gravel-wet	120	1922
Gypsum-crushed	115	1840
Iron ore	145	2320
Lime	60	960
Lime stone	90	1440
Manure-liquid	65	1040
Manure-solid	45	720
Peat-solid	47	752
Phosphate-granular	90	1440
Potash	68	1088
Quartz-granular	110	1760
Salt-dry	100	1602
Salt-Rock-solid	135	2160
Sand-dry	108	1728
Sand-wet	125	2000
Sand-foundry	95	1520
Shale-crushed	90	1440
Slag-crushed	70	1120
Snow	15-50	240-800
Taconite	107	1712

Note: *The densities listed are average values and intended only as a guide for bucket selection. For a material that is not in the table, obtain its density value before selecting the appropriate bucket.*

Bucket Selections

To use the table, find the material to be loaded and its maximum density. Then multiply the volumetric rating of the attachment by the material density to determine if the attachment can safely be used. See page 70 for a listing of attachments and their ratings.

Note: *Where the material density is listed as a range (snow at 15-50 lbs./ft^3, for example), always use the maximum density (50 lbs./ft^3 in this example) for making calculations. Also, see the following examples.*

Example 1: If snow (density of 15-50 lbs./ft^3) is to be hauled using an SL1640E model loader using Dirt/Construction Bucket, the bucket capacity is 5.3 ft^3 and the Rated Operating Capacity is 850 lbs. Multiply the density of snow (50 lbs./ft^3) by the capacity of the bucket (5.3 ft^3) to achieve the weight being carried (50 lbs./ft^3 x 5.3 ft^3 = 265 lbs.). This number is less than the machine rating, so you could safely use this bucket in this application.

Example 2: If charcoal (density of 368 kg/m^3) is to be hauled using a SL1640E model loader using a 914mm Dirt/Construction bucket, the bucket capacity is 0.15 m^3 and the Rated Operating Capacity is 386 kg. Multiply the density of charcoal (368 kg/m^3) by the capacity of the bucket (0.15 m^3) to achieve the weight to be carried (368 kg/m^3 x 0.15 m^3 = 55.2 kg). This number is less than the machine rating, allowing safe use of this bucket in this application.

TORQUE SPECIFICATIONS

Use these torque values when tightening hardware (excluding: locknuts, and self-tapping, thread forming, and sheet metal screws) unless otherwise specified.

UNIFIED NATIONAL THREAD	GRADE 2		GRADE 5		GRADE 8	
	DRY	LUBED	DRY	LUBED	DRY	LUBED
8-32	19*	14*	30*	22*	41*	31*
8-36	20*	15*	31*	23*	43*	32*
10-24	27*	21*	43*	32*	60*	45*
10-32	31*	23*	49*	36*	68*	51*
1/4-20	66*	50*	9	75*	12	9
1/4-28	76*	56*	10	86*	14	10
5/16-18	11	9	17	13	25	18
5/16-24	12	9	19	14	25	20
3/8-16	20	15	30	23	45	35
3/8-24	23	17	35	25	50	35
7/16-14	32	24	50	35	70	55
7/16-20	36	27	55	40	80	60
1/2-13	50	35	75	55	110	80
1/2-20	55	40	90	65	120	90
9/16-12	70	55	110	80	150	110
9/16-18	80	60	120	90	170	130
5/8-11	100	75	150	110	220	170
5/8-18	110	85	180	130	240	180
3/4-10	175	130	260	200	380	280
3/4-16	200	150	300	220	420	320
7/8-9	170	125	430	320	600	460
7/8-14	180	140	470	360	660	500
1-8	250	190	640	480	900	680
1-12	270	210	710	530	1000	740

METRIC COARSE THREAD	GRADE 8.8		GRADE 10.9		GRADE 12.9	
	DRY	LUBED	DRY	LUBED	DRY	LUBED
M6-1	8	6	11	8	13.5	10
M8-1.25	19	14	27	20	32.5	24
M10-1.5	37.5	28	53	39	64	47
M12-1.75	65	48	91.5	67.5	111.5	82
M14-2	103.5	76.5	145.5	108	176.5	131
M16-2	158.5	117.5	223.5	165.5	271	200

*All Torque Values are in ft-lbs. except those marked with an *, which are in-lbs. For metric torque value (N·m), multiply ft-lbs. value by 1.355 or the in-lbs. value by 0.113.

GEHL COMPANY

WARRANTY

GEHL COMPANY, hereinafter referred to as Gehl, warrants new Gehl equipment to the Original Retail Purchaser to be free from defects in material and workmanship for a period of twelve (12) months from the Warranty Start Date.

GEHL WARRANTY SERVICE INCLUDES:

Genuine Gehl parts and labor costs required to repair or replace equipment at the selling dealer's business location.

GEHL MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED (INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE), EXCEPT AS EXPRESSLY STATED IN THIS WARRANTY STATEMENT.

ANY OF THESE LIMITATIONS EXCLUDED BY LOCAL LAW SHALL BE DEEMED DELETED FROM THIS WARRANTY STATEMENT; ALL OTHER TERMS WILL CONTINUE TO APPLY.

SOME STATES DO NOT PERMIT THE EXCLUSION OF LIMITATION OF THESE WARRANTIES AND YOU MAY HAVE GREATER RIGHTS UNDER YOUR STATE LAW.

GEHL WARRANTY DOES NOT INCLUDE:

1. Transportation to selling dealer's business location or, at the option of the Original Retail Purchaser, the cost of a service call.
2. Used equipment.
3. Components covered by their own non-Gehl warranties, such as tires, batteries, trade accessories and engines.
4. Normal maintenance service and expendable, high-wear items.
5. Repairs or adjustments caused by: improper use; failure to follow recommended maintenance procedures; use of unauthorized parts or attachments; accident or other casualty.
6. Liability for incidental or consequential damages of any type, including, but not limited to lost profits and expenses of acquiring replacement equipment.

No agent, employee or representative of Gehl has any authority to bind Gehl to any warranty except as specifically set forth herein.

INDEX

O

P

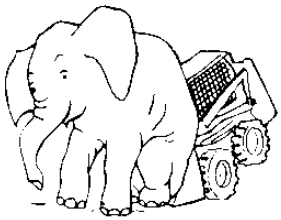
R

S

T

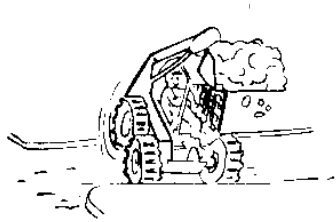
W

WRONG



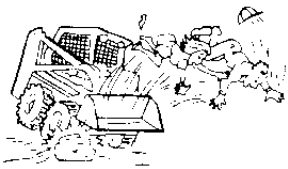
Never exceed rated operating load.

WRONG



Always carry attachment as low as possible. Do not travel or turn with the lift arm raised. Load, unload and turn on flat level surface.

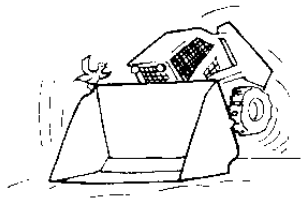
WRONG



Never carry riders.

Keep bystanders away from work area.

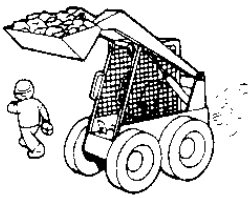
WRONG



Never modify equipment.

Use only attachments approved for the loader.

WRONG



Never leave loader with engine running or with lift arm up. To park, engage parking brake and put attachment flat on the ground.

WARNING

THIS OPERATOR'S MANUAL IS PROVIDED FOR OPERATOR USE

DO NOT REMOVE FROM THIS MACHINE

Do not start, operate or work on this machine until you carefully read and thoroughly understand the contents of this Operator's Manual.

Failure to follow safety, operating and maintenance instructions can result in serious injury to the operator or bystanders, poor operation, and costly breakdowns.

If you have any questions on proper operation, adjustment or maintenance of this machine, contact your dealer or the Gehl Company Service Department before starting or continuing operation.

California Proposition 65 Warnings

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer and birth defects or other reproductive harm.
Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling battery.

GEHL®

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www.gehl.com

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