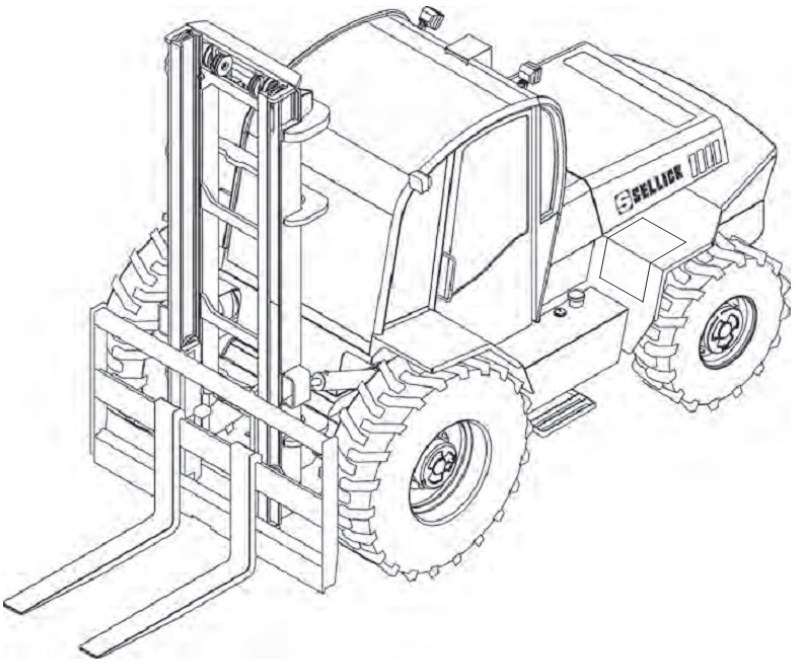
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SELLICK

# Operator's Manual

## S Series - Tier 4 Ecomax




## S60/S80/S100/S120/S150

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**Please record the information in the spaces provided.**

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Issued by:

Sellick Dealer: _____

Address: _____

City: _____

Province/State: _____ Postal/Zip Code: _____

Telephone Number: _____ Fax Number: _____

Delivery Date: _____

## Note

Under OSHA rules, it is the responsibility of the employer to provide operator training. Sellick Equipment Limited can provide materials to assist the employer in complying with OSHA rule 1910.178 (l) for Powered Industrial Trucks (Federal Register/Vol. 63, No. 230/Tuesday, December 1, 1998/Rules and Regulations). Additional materials, including machine-specific and workplace-specific knowledge by the operator and certification by the employer, as defined by the OSHA rule, are required.

## Note

All Sellick Equipment Limited forklifts comply with current U.S. EPA standards for large, non-road, compression-ignition engines.

**SELLICK EQUIPMENT LIMITED**

**THIS FORKLIFT CONFORMS TO THE REQUIREMENTS OF ANSI/ITSDF B56.6-2016 SAFETY STANDARDS FOR POWERED INDUSTRIAL TRUCKS.**

272490-B

**CALIFORNIA**

**Proposition 65 Warning**

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

272491

**For extra copies of this manual, order part #272941-A**

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## Model and Serial Numbers

Please record the serial and model numbers of the forklift and major components in the spaces provided. Quote these numbers when ordering.

Forklift Model Number: _____

Forklift Serial Number: _____

Mast Serial Number: _____

Engine Model Number: _____

Engine Serial Number: _____

Transmission Serial Number: _____

Front Axle Serial Number: _____

Rear Axle Serial Number: _____

Door Key Number: _____

Ignition Key Number: _____

Attachments: _____

Sellick Dealer: _____

Contact: _____

Dealer Address: _____

_____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____

Web Site: _____



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# Introduction



**Warning**

## Serious Injury or Death Hazard

**Before operating the forklift, read and understand this operator's manual and the *AEM Safety Manual*, part #272052.**

The S Series Operator's Manual explains the features and functions of the forklift. The manual describes the proper procedures for visual inspection, safe operation, preventive maintenance and service of the forklift.

The manual is directed to an OSHA-trained operator. It contains information necessary for the safe operation of the forklift.

The safety of the operator and others depends on using good judgement when operating the forklift. Always operate the forklift with care. Follow the preventive maintenance and service schedules included in this manual.

## Note

It is the operator's responsibility to read and understand all the information in the manual before operating the forklift. If the operator requires more information about the forklift, contact Sellick Equipment Limited (refer to the contact information at the bottom of this page).

**Sellick Equipment Limited**
358 Erie Street North
Harrow, Ontario, Canada N0R 1G0
Telephone: 519-738-2255 Fax: 519-738-3477
E-mail: sellick@mnsi.net Web Site: www.sellickequipment.com

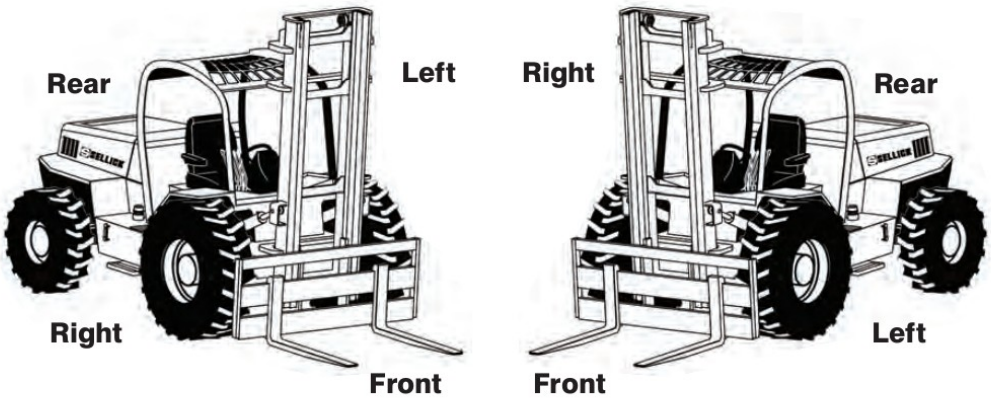


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Throughout the manual, references will be made to ***left, right, front, and rear.*** While seated and facing the forks, the operator is facing the ***front*** of the forklift. Therefore, the ***rear*** is behind the operator and the ***left*** and ***right*** are the corresponding sides.




The following safety alert symbol and signal words will appear throughout the manual.

Read the messages that follow the signal words carefully, and seek clarification or more information if necessary.

## Note

The safety alert symbol indicates potential personal injury hazard. A signal word without a safety alert symbol indicates potential property or equipment damage.

## ⚠ Danger

**Indicates immediate hazards that will result in severe personal injury or death. This is reserved for the most extreme situations.**

## ⚠ Warning

**Indicates potential hazards that could result in severe personal injury or death.**

## ⚠ Caution

**Indicates potential hazards that could result in minor or moderate personal injury.**

## Caution

**Indicates potential hazards that could result in property or equipment damage only - not personal injury.**

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Lack of operating knowledge and training can lead to accidents. Read and understand the following safety precautions before operating the forklift.

## Note

OSHA 1910.178 requires the employer to ensure that operators successfully complete operator training. For more information, refer to OSHA 1910.178.

## Note

Read, understand and adhere to the following safety precautions. For more information, refer to ANSI/ITSDF B56.6, Safety Standard for Rough Terrain Forklift Trucks (free downloads of the Standard are available at www.itsdf.org).

## ⚠ Warning

**Before operating the forklift, read and understand this operator's manual and the AEM Safety Manual, part #272052. If anything in these manuals is unclear, seek clarification.**

- Read and understand this operator's manual before operating the forklift. Keep the manual in the forklift.
- DO NOT install attachments, disconnect safety devices, add to or otherwise modify the forklift without the manufacturer's prior written approval. If approval is granted: capacity, operation, and maintenance instruction plates, tags, or decals must be changed accordingly.
- Ensure all nameplates, instruction markings and safety labels are in place and legible. Refer to page 10 for safety labels.
- Know the rated capacity and operating characteristics of the forklift.
- Understand conditions that may affect forklift capacity, including changes in load dimensions and fork wear.
- Understand conditions that may affect stability, including: improper operation, faulty maintenance, ground conditions, grade, speed, loading, dynamic and static force, and improper tire inflation.
- Only trained, authorized personnel are permitted to maintain, repair, rebuild, adjust and inspect the forklift, and they may only do so in accordance with the manufacturer's specifications.
- Train in the use of unfamiliar attachments before operating a load.
- Know and follow the regulations of the job site.
- DO NOT use the forklift to lift personnel. This rough-terrain forklift is intended as material-handling equipment. It is NOT intended for use as a personnel lift.

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# General Safety Precautions

- Carry all load-engaging means or loads at minimum ground clearance.
- DO NOT not stand on or under the forks. Refer to Figure 1 on page 10 for corresponding safety decal.
- DO NOT allow riders anywhere on the forklift. Refer to Figure 2 on page 10 for corresponding safety decal.
- DO NOT consider the overhead guard a substitute for good judgement and care in operating. The overhead guard protects against falling objects; it cannot protect against every possible impact.
- Never drive up to anyone standing in front of a bench or other fixed object.
- Stay clear of the area between the mast uprights and the outside of the operator's compartment.
- Completely walk around the forklift to ensure it is clear of personnel and obstructions before starting the engine.
- Fasten the seat belt when operating the forklift. Refer to Figure 5 on page 10 for corresponding safety decal.
- Always sit in the operator's seat, with seat belt fastened, park brake applied and transmission in NEUTRAL when starting the engine or operating controls.
- Never start the engine or operate controls while standing outside the forklift.
- Apply the park brake before leaving the operator's seat. Refer to Figure 10 on page 10 for corresponding safety decal.
- Never leave the forklift unattended in public places or while the engine is running.
- DO NOT engage in stunt driving or horseplay.
- Never suspend a load without written instructions and approval from Sellick Equipment.
- Always remember: safe operation is the responsibility of the operator.

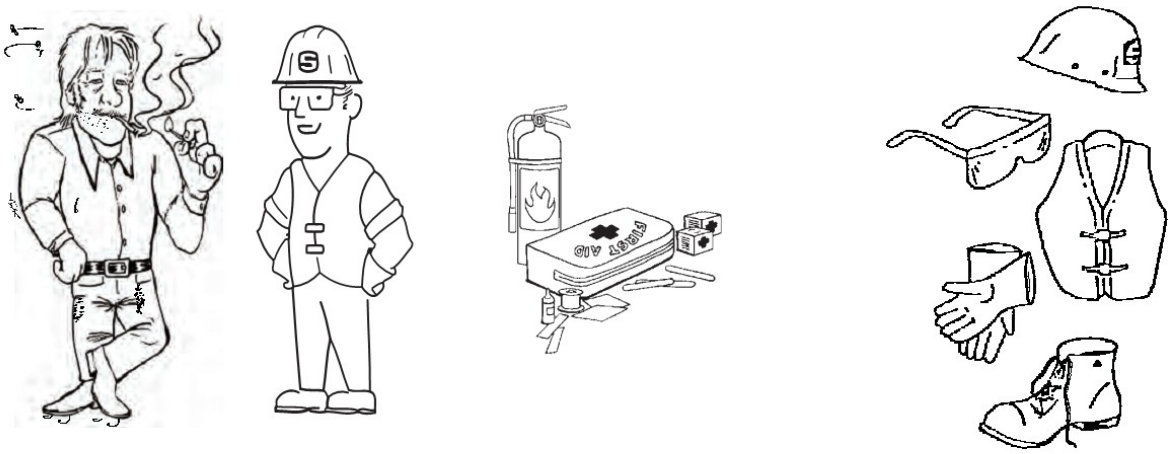


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# Operator Safety Requirements




***For the safety of the operator and others, ALWAYS follow these guidelines when operating the forklift:***

- DO NOT wear loose or untucked items such as: jackets, shirts, sleeves, or jewelry.
- Always wear close-fitted, belted clothing to avoid entanglement hazards.
- DO NOT use drugs, alcohol, prescription or over-the-counter medications that can affect alertness.
- Always seek expert advice about medication BEFORE operating the forklift.
- Always store a first aid kit in an accessible location. Use proper first aid supplies on scratches, cuts, and other minor injuries immediately.
- Always know the location of fire extinguishers and other safety equipment. Know how to use them.
- Always wear personal protective equipment, including: safety helmet, safety goggles, gloves, reflective vest, and steel-toed safety boots.
- Always wear a suitable protective device when exposed to loud noise.
- Always keep operator's platform and stepping points free of slip-and-fall hazards such as: grease, mud, snow, or ice.
- Always follow all local traffic rules when travelling.



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# Nameplates and Decals

- Check that all nameplates and decals are in place and legible.
- Replace safety decals when they become illegible.
- All safety decals below are available in decal packages #272807 and #272936.




Figure 1
Fork Warning
Location: Mast Rails
Quantity: 2 (1 on each rail)




Figure 2
No Riders Warning
Location: Fenders
Quantity: 2 (1 on each fender)




Figure 3
Pinch Point Area Warning
Location: Tilt Cylinders
Quantity: 2 (1 on each tilt cylinder)




Figure 4
Read Manual Warning
Location: Crossbar of Overhead Guard, Operator's Manual Case
Quantity: 2 (1 in each location)




Figure 5
Seat Belt Warning
Location: Crossbar of Overhead Guard
Quantity: 1




Figure 6
Sideshift Warning
Location: Crossbar of Overhead Guard
Quantity: 1




Figure 7
Shutdown Warning
Location: Right and Left Dash Panel
Quantity: 2 (1 in each location)




Figure 8
4WD Caution
Location: Left Dash Panel
Quantity: 1

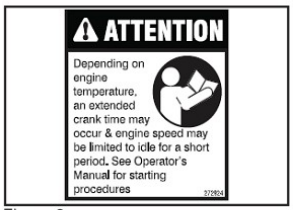



Figure 9
Cold Start Attention
Location: Next to Ignition Switch
Quantity: 1




Figure 10
Park Brake Warning
Location: Top Right Seat Box
Quantity: 1




Figure 11
Radiator Warning
Location: Radiator Top
Quantity: 1




Figure 12
Fan Belt Warning
Location: On Fan Shroud
Quantity: 2 (1 on each side)

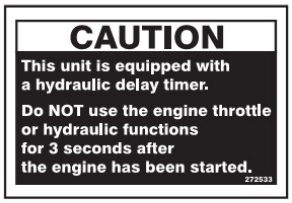



Figure 13
Hydraulic Delay Timer Caution
Location: Left of Control Valve Handles
Quantity: 1




Figure 14
Ignition Bypass Danger
Location: On Starter Assembly, Left of Battery
Quantity: 2 (1 in each location)




Figure 15
Diesel Fuel Only
Location: Fuel Tank
Quantity: 1

**Note:** Pressure washing can cause decals to lift at the edges and peel away from the surface. Use care when aiming the water spray from the nozzle of a pressure washer. Avoid sharp spray angles.



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# Preoperational Checks

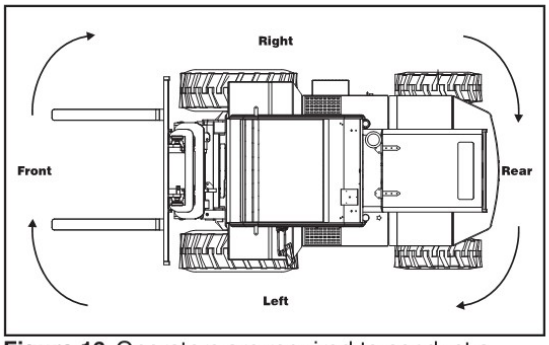



**Figure 16** Operators are required to conduct a daily walk-around inspection before operating forklift.

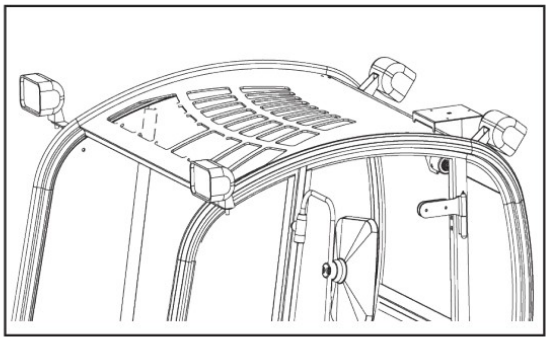


**Figure 17** Check the overhead guard lights for damaged, loose, or missing parts.

## *Before Beginning the Walk-around Inspection*

Operators are required to conduct a daily walk-around inspection before operating the forklift (Figure 16).

Photocopy the ***Operator's Daily Checklist***, on page 32, for use as a permanent record. This checklist is only a guide; it is the responsibility of the operator to ensure that the forklift remains in good working order.

Before beginning the walk-around inspection, ensure:

| | |
|---|---|
| • The park brake is applied | • The engine is OFF |
| • All controls are in NEUTRAL positions | • The forks are lowered to the ground |
| • The transmission is in NEUTRAL | • The wheels are chocked if the forklift is on an incline |

**Note**

To engage the park brake, pull the lever up to a vertical position. To disengage, squeeze the release mechanism, and push the park brake fully forward into the horizontal position.

## Chassis and Overhead Guard

- Inspect the overall condition of the chassis and overhead guard of the forklift.
- Check for damaged structure or broken welds.
- Check all exposed nuts and bolts for damage or looseness.
- Check the lights on the overhead guard or cab for damaged, loose, or missing parts (Figure 17).
- Ensure work lights, mirrors, and windows are kept clean.
- If the forklift is equipped with a cab, refer to page 35 for information.



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## Mast

- Check the mast rails, rollers, and chains for loose, damaged or missing parts and fittings (Figure 18).
- Check all welds for cracks or breaks.
- Check the roller pathways for metal flakes, dirt or other obstructions that may interfere with the safe operation of the mast.

## Mast Chains

- Inspect the mast chains for missing or broken links, pins or cotter pins. Look closely for turned or seized parts (Figure 19).
- Check all welds for cracks or breaks.
- Check the roller pathways for metal flakes, dirt or other obstructions that may interfere with the safe operation of the mast.

## Carriage

- Inspect the whole carriage for damage or excessive dirt.
- If the forklift has hook forks, check for missing or damaged fork lock pins (Figure 20).

## Forks

- Inspect for surface cracks, especially at the heel and welds attaching all mounting hardware to the fork shank.
- Check for straightness of the blade and shank.
- Check for excessive fork angle.
- Check tip alignment.
- Check fork positioning lock damage.



**Figure 18** Thoroughly inspect mast rails, rollers and chains for damage.



**Figure 19** Inspect the mast chains for missing or damaged links, pins or cotter pins. Look closely for turned or seized parts.

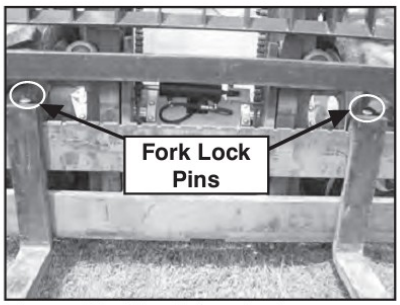



**Figure 20** Check for missing or damaged fork lock pins.

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## Forks

- Check for wear. If wear is detected, contact Sellick Equipment Limited for service information.
- Check for marking. Replace illegible fork identification marking.
- Check fork shafts for missing or damaged collars and bolts.
- If any irregularities, damage or wear is detected in the forks, DO NOT use the forklift until the forks have been replaced.
- Forks should be inspected at least once a year, or more frequently for more severe applications, using a fork caliper. Contact Sellick Equipment Limited for information.

### Note

Remember: Fork wear reduces capacity. A 10% reduction in blade thickness results in a 20% reduction in capacity. Improper use and neglected maintenance could make forks dangerous. Know what proper-functioning forks look like, and be able to detect excessive wear and/or irregularities. For additional information about forks, contact Sellick Equipment Limited.

## Cylinders

- Ensure all cylinder pins and snap rings are tight and secure.
- Check cylinder rods for scratches, grooves, or leaking seals (Figures 21-24).
- Check all hydraulic fittings and hoses for damaged, loose or missing parts.



**Figure 21** Tilt Cylinders

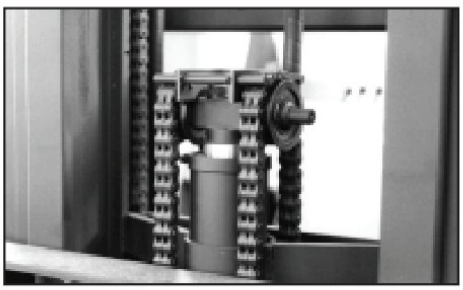


**Figure 22** Lift Cylinder

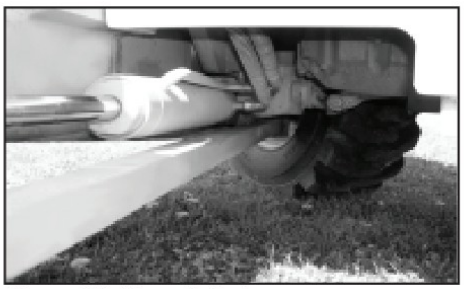


**Figure 23** Steer Cylinder

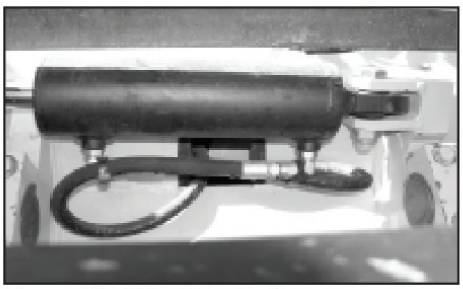


**Figure 24** Sideshift cylinder



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## Tires

- Inspect the drive and steer tires for wear, cracks, cuts, gouges, foreign objects, or leaks.
- Check all valve stems for leaks.
- Check all wheel nuts and bolts for tightness. Refer to the wheel nut torque decal, located on the tire rim, for accurate torque information.
- For safety reasons, never check tire pressure from the tire side. Always check tire pressure from the tread side with a long-handled gauge (Figure 25).
- The operator should only check tire pressure. Only trained, authorized personnel should inflate the tires.
- Check tire inflation only when tires are cold.
- Inflate all tires according to the manufacturer's specifications on the tire.
- DO NOT overinflate.
- When required, replace tires with OEM-approved tires.



**Figure 25** Check tire pressure only from tread side with a long-handled gauge.

### Note

Refer to the decal located on the tire rim for accurate wheel nut torque information.

## Hydraulic System

- Using a piece of cardboard, check for leaks in the hydraulic tank, fittings and lines.
- ***Never use bare hands to check for leaks!*** Hydraulic oil escaping under pressure can have enough force to penetrate skin. Hydraulic oil may also infect a minor cut or opening in the skin.
- If someone is injured by escaping oil, seek medical attention immediately. Serious infection or reaction can result if medical treatment is not given immediately.
- Inspect the hydraulic system again at the end of the operational check, after it has been under pressure.

### ⚠ Warning

**The hydraulic system is pressurized. Use caution when inspecting and servicing. Remove pressure by slowly opening the filler cap.**



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## Hydraulic Oil Level

Before checking the hydraulic oil level, ensure:

- The forklift is on level ground.
- The park brake is engaged.
- The transmission is in NEUTRAL.
- The ignition is OFF.
- The mast is vertical.
- All hydraulic control levers have been cycled to release pressure from the system.
- All hydraulic control levers are in their neutral positions.
- Use the sight gauge to check hydraulic oil level daily (Figure 26). Always maintain the correct level; low levels can lead to pump damage. If the level is low, refer to page 65 for correct refilling techniques.
- Never overfill. Refer to page 86 for the correct type of hydraulic oil.
- Check the rest of the hydraulic lines, tanks and fittings for damage, cuts, leaks, and looseness.



**Figure 26** Hydraulic oil sight gauge.

## Rear Lights

- Check the rear lights for damaged, loose, or missing parts.
- Ensure the rear lights and grille are clean (Figure 27).

## Air Cleaner

- Ensure both inner and outer air filter components are secured in place with the clamps and are free of debris (Figure 28).



**Figure 27** Ensure the rear lights and grille are clean.

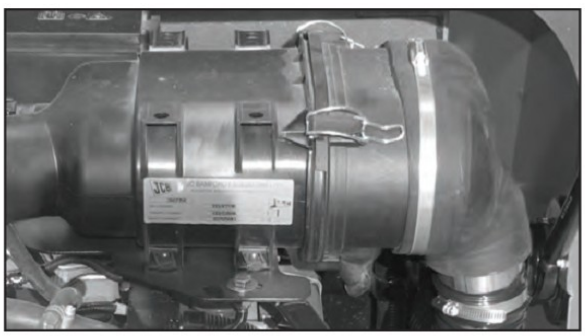


**Figure 28** Ensure both inner and outer air filter components are secure.



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## Engine Coolant Level

Check the coolant level using the radiator overflow bottle (Figure 29), when the engine is cold. Ensure the level reaches the lower mark (A).

- Refer to page 67 for more information on adding coolant.
- Check the radiator for damage or leaks, and remove any debris that may block air flow.

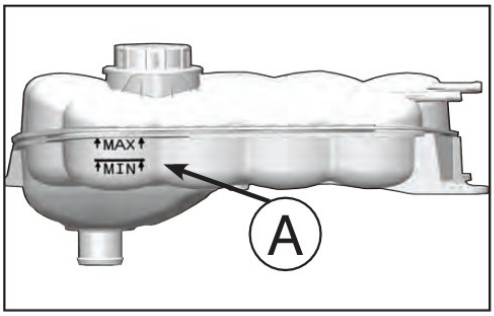



**Figure 29** When the engine is cold, the coolant level should reach the lower mark (A).

## Engine Oil

- Check the engine oil level using the dipstick located under the hood (Figure 30). Ensure the oil level is between the two lines marking ***full*** and ***low***. (Figure 31). Refer to page 63 for more information on adding engine oil.
- Check for leaking oil in the engine compartment and under the forklift.




**Figure 30** Check the engine oil level using the dipstick located under the hood.

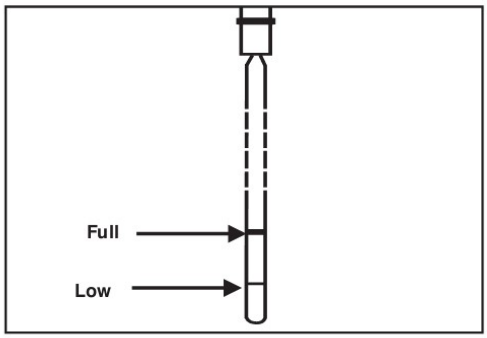



**Figure 31** Ensure that the engine oil level is between the full and low marks.

**Warning**

**Never remove the radiator cap while the system is hot. Always turn the cap slowly to the first stop and allow the pressure to escape before removing it completely.**



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## Transmission Fluid

- Check the transmission level daily with the engine cold and turned off (Figure 31).
- Ensure that the fluid level is between the ***full*** and ***low mark*** (Figure 32). See page 69-71 for more information.

## Transmission Oil Cooler

- Check the transmission oil cooler, fittings and hoses for damage, blockage or leaks (Figure 33).
- Check for restricted air flow in the engine compartment that could cause engine overheating.

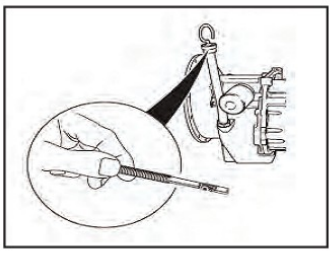


**Figure 31** Check the trans. fluid level when engine is cold.

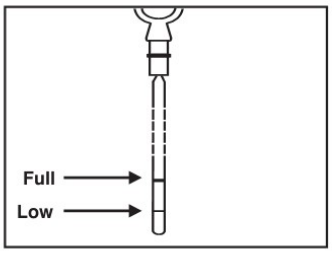



**Figure 32** Ensure that the fluid level is between full and low.



**Figure 33** Check for leaks, blockage, or damage on the transmission oil cooler, fittings, and hoses.

## Battery

- Ensure the positive and negative posts are clean and secure (Figure 34).
- If the battery needs cleaning, refer to page 72 for the proper cleaning procedure.

## Belts

- Check the belts for wear (A in Figure 35) and replace if necessary. Refer to page 75 for the proper belt replacement procedure.

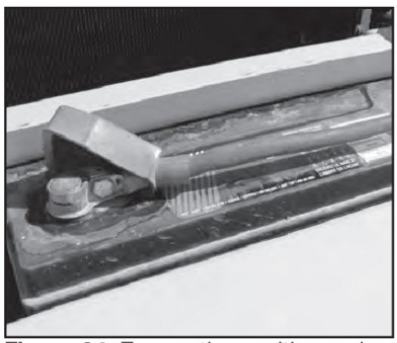


**Figure 34** Ensure the positive and negative posts are clean and secure.

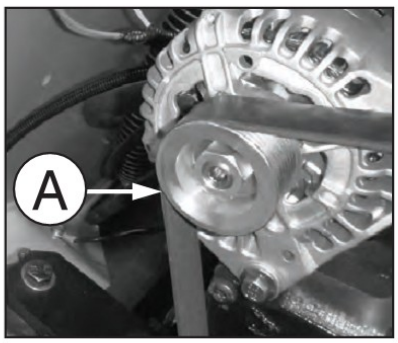



**Figure 35** Location of the belts (A).



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## Fuel - Refueling Procedure

- Ensure to use the correct fuel (Ultra Low Sulphur Diesel). The injection pump, injector or other parts of the fuel system can be damaged if the wrong fuel or fuel additives are used.
- Forklifts using liquid fuels should be refueled only at locations designated for that purpose. Safe outdoor locations are preferable to those indoors.
- Never smoke or keep any type of open flame near the forklift while servicing fluids.
- The fuel tank is located on the left side of the forklift. Check the fuel level by reading the fuel gauge on LCD display.
- If the level is low, clean the filler cap and surrounding area before opening the cap.
- Slowly open the filler cap, insert the nozzle and fill the tank. DO NOT overfill the tank.
- Ground the nozzle against the filler neck to prevent sparks.
- If the fuel overflows or spills, wipe the entire area.
- To minimize condensation on the walls of the tank, always fill it at the end of the day.
- Refer to ***Fluid Types and Capacities*** chart on page 86 for the correct types and quantities of fuel.

**Caution**

**Using incorrect or contaminated fuel can cause extensive damage to the engine and exhaust gas recirculation (EGR) system. Use only ULTRA LOW SULPHUR DIESEL fuel.**

**⚠ Warning**

**Never refill the fuel tank when the engine is running. Never smoke when refilling fuel tank.**

## Mounting the Forklift

- When mounting or dismounting, maintain three-point contact with the machine; always have three out of four limbs in contact with the forklift (Figure 36).
- Always face the machine.
- To prevent falls, always use the stepping points and grab handles when climbing into the operator's compartment.
- Never use the steering wheel as a grab handle when getting into the operator's compartment.
- Never step on the foot controls when mounting or dismounting.
- Keep stepping points and platform clear of debris, mud, snow, ice and other possible trip or slip hazards.
- Never mount or dismount when the engine is running or the forklift is moving.



**Figure 36** When mounting or dismounting, maintain three-point contact with the machine.



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## Seat Belt

- Check the seat belt for proper functioning, wear and damage.
- Ensure the brackets, nuts and bolts are secure.
- Never operate the forklift if the seat belt is damaged.

## Operator's Compartment

- For safety, ensure that the operator's compartment is clean and all loose items are removed or secured (Figure 37).
- Inspect the top of the dash for damage.
- Ensure the horn works properly.
- Ensure the park brake moves freely; and button releases and sets properly; and check for loose or missing nuts and bolts.
- Ensure the hydraulic control levers, accelerator and brake pedals all move freely and return to their neutral positions.
- Ensure the gear shifter and the forward/reverse selector move freely and return to their neutral positions. Fully press the brake pedal while conducting this check.

## Ignition

- Turn the ignition key to ON to check the function of indicator lights, gauges and switches (Figure 38).



**Figure 37** Ensure that the operator's compartment is clean and all loose items are removed or secured.

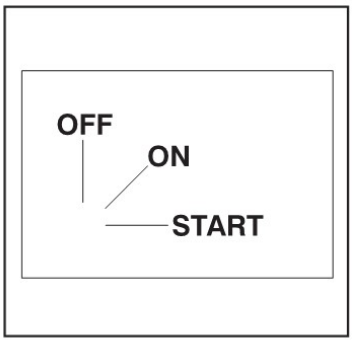



**Figure 38** Ignition

**⚠ Warning**

**Never mount or dismount when the engine is running or the forklift is moving.**



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# Indicator Lights, Gauges and Instruments

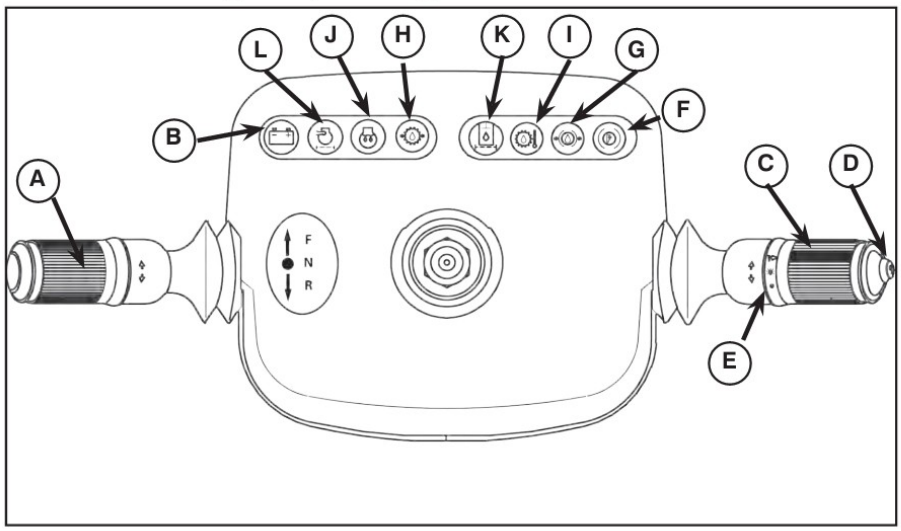



**Figure 39** Ensure all indicator lights, gauges and instruments work properly before operating the forklift.




**Figure 40** LCD Display.

Ensure all lights, gauges and instruments work properly before operating the forklift.

A. Forward/Reverse Selector

- To select ***forward***, move the forward/reverse selector lever forward. To select ***reverse***, move the lever back.

B. Low Voltage Warning Light

- If this light turns on during operation, or fails to turn off after the engine starts, do not operate the forklift until it has been serviced.

C. Turn Signal Lever (Optional)

- In forklifts with optional turn signals, to select ***left,*** move the turn signal lever forward; to select ***right,*** move the lever back.

D. Horn

- To sound the horn on the forklift, press the button at the tip of the turn signal lever.

E. Lights

- To turn on the lights, rotate the turn signal lever back.
- The neutral position indicate the lights are off.
- The second position turns on the instrument panel lights and hood lights.
- The third position indicates all lights are on; including instrument panel lights, hood lights, head lights, and work lights

F. Park Brake Indicator Light

- This light turns on when the park brake is engaged.

## Note

Rear work lights only work when lights are on AND forklift is in reverse.

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G. Service Brake Low Pressure Warning Light

- If light turns on during operation, or fails to go off after starting, do not operate the forklift until it has been serviced.

H. Transmission Pressure Warning Light

- If this light turns on during operation, do not operate the forklift until it has been serviced.

I. Transmission Temperature Warning Light

- If this light turns on during operation, do not operate the forklift until it has been serviced.

J. Preheat Indicator Light

- This light turns on when the ignition key is in the ON position, while the engine is preheating.

K. Hydraulic Filter Indicator Light

- This light turns on when there is a restriction in the hydraulic filter. If this light turns on during operation, do not operate the forklift until it has been serviced.

L. Air Filter Indicator Light

- If this light turns on, stop operation and change the air filter.

## Switch Panel

A. Windshield Washer

- Press the windshield washer switch to ensure that it works properly.

B. Windshield Wipers

- Press the windshield wiper switch to ensure that wipers work properly
- Check the wipers for damaged, loose, or missing parts.

C. Powershift Transmission Option (Standard on S150)

- There are two icons on the switch. A rabbit on top, and a turtle on the bottom. When the turtle is depressed, Powershift starts and stays in 1st gear. When the rabbit is depressed, Powershift starts in 2nd gear and shifts automatically.

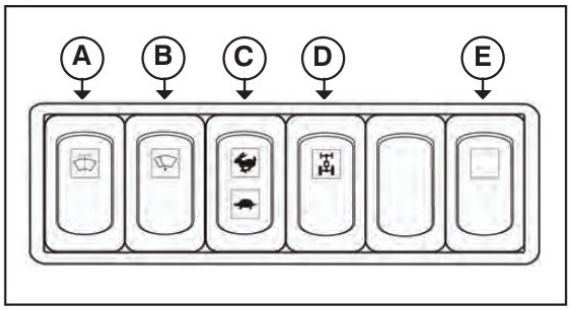



**Figure 41** Ensure all switches function properly before operating the forklift.

D. 4WD Option

- This switch activates the 4WD option. Only operate 4WD in the necessary conditions. See page 37 for more information.

E. Powershift Warning Buzzer/Light (Standard on S150)

- The powershift warning buzzer/light signals system status and warnings to the operator. See page 38 for more information regarding transmission diagnostics.

F. Engine Shutdown Option (not illustrated)

- To start the engine, press and hold the bypass button on the dashboard until the engine oil pressure rises to normal operating range.

***Note: If the switch is pressed but not held down momentarily, the engine will turn off.***

- During operation, the engine shutdown option automatically shuts down the engine in case of low engine oil pressure, high transmission fluid temperature, or high engine temperature.
- In the event of a shutdown, do not operate the forklift until it has been serviced.
- If the level of oil, coolant, or fuel becomes critically low, bring them to the forklift. Never drive to refill an already dangerously low



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## Heating and Optional Cooling Switches and Dials (Figure 42)

A. Fan

- Turn the fan speed control dial clockwise to ensure that it works properly.
- Check the fan for damaged, loose, or missing parts.

B. Optional Cooling On/Off switch

- Press the optional cooling rocker switch on and off to ensure that it is functioning properly.

C. Temperature Control

- Turn the temperature dial clockwise to ensure the heating and optional cooling works properly.

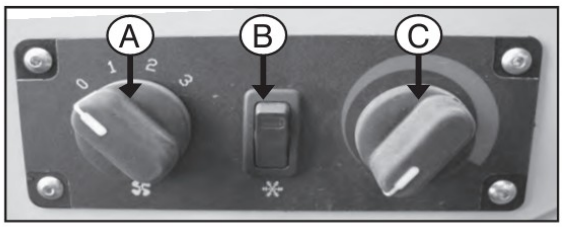



**Figure 42** Ensure heating and optional cooling switches and dials function properly before operating the forklift.

## Dome Light (Figure 43)

- The dome light switch is located on the dome light itself.
- Press the dome light switch on and off to ensure that it works properly.
- Ensure that all bolts are secure.

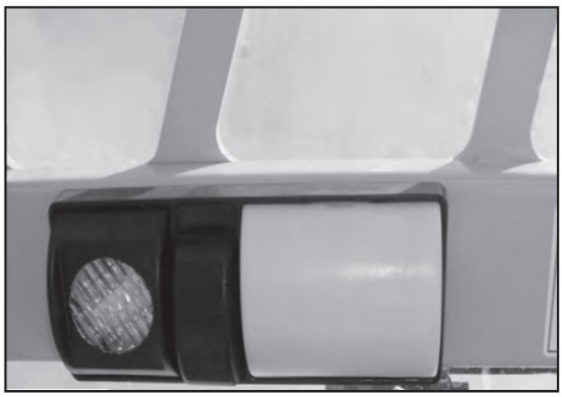


**Figure 43** Dome Light

## Doors (Figure 44)

- Inspect the doors for damaged, loose or missing parts.



**Figure 44** Doors



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## LCD Display

The LCD instrument cluster has various screens displaying operational and diagnostic information. It's essential operators understand what the icons are and what faults compromise performance and operation.

## Boot-up Screen

When key is turned ON the engine will perform a preheating cycle if necessary. WAIT for preheat cycle to complete prior to cranking engine. LCD display shows Sellick Logo then displays default screen while initiating the system (Figure 45).




**Figure 45** Boot-up screen

## Default Screen

Will show at startup after the Sellick logo OR when the first button (1) is pressed. It will default to display fuel level and coolant temperature. (Figure 46)



The left side of the screen displays fuel level in a graph and as a percentage of fuel left in the tank.



The right side of the screen displays engine coolant temperature.




**Figure 46** Default Screen



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## System Voltage/RPM Screen

When the second button (2) is pressed once, the screen displays system voltage and engine RPM (Figure 47).

The left side of the screen displays voltage information (in volts) on a graph.

The right side of the screen displays engine RPM on a graph (x 1000).




**Figure 47** System voltage / RPM.

## Fuel Level/Engine Coolant Temp/ System Voltage/Hour Meter

When the third button (3) is pressed once, the screen displays three of the previous described gauges *plus* the hour meter (Figure 48).

Engine hour meter shows accumulated run time for the machine.




**Figure 48** FL/ECT/SV/Hour Meter.



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## Fault Menu

When the fourth button is pressed the fault menu appears and the operator has two options (Figure 50).

A) Active Faults

B) Previous Faults

The display buttons while in the fault menu now function as listed below:

1) Exit
2) Scroll Up
3) Scroll Down
4) Enter

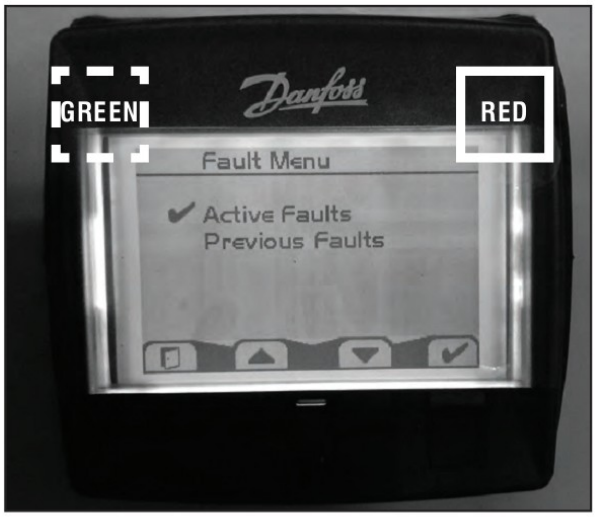



**Figure 50** Fault Menu

## Fault Indicator Lights

The display console has flashing lights on either corner of the screen to warn the operator that a fault in the system has been logged (Figure 50). If an indicator is flashing, the fault can be displayed by entering into the *Active Faults* menu.

**GREEN** indicator: Service Engine Soon
**RED** indicator: Engine Malfunction

**A) Active Faults:**

Displays any currently active faults logged with the machine. The details of the faults can be displayed to troubleshoot the cause of the error (Figure 51).

**B) Previous Faults:**

Displays any previously active faults logged with the machine. The details of the faults can be displayed to troubleshoot the cause of the error.




**Figure 51** Displaying active faults.

## Note

Fault codes cannot be cleared via the display console.



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# Operational Checks

**Operational checks must be made with the engine running. Always follow these safety guidelines:**

**⚠ Danger**

**Ensure forklift is clear of all people and obstructions before starting these checks.**

**⚠ Danger**

**Never start or run the engine in a closed or poorly ventilated area where exhaust gases can accumulate. Inhaling carbon monoxide gases steadily for even a few minutes can endanger health or life. Avoid breathing carbon monoxide.**

**⚠ Warning**

**Do not use ether or any other starting aids with the thermostart (engine preheat). This combination will result in a manifold explosion.**

**⚠ Danger**

**Do not jump across starter terminals. Start the forklift only from the operator's seat with the transmission in neutral. Refer to Figure 9 on page 10 for the corresponding safety decal.**

**Caution**

**NEVER allow the engine to idle for extended periods of time. This can result in premature wear and damage to the engine and exhaust components.**

## Starting Procedures

The forklift will only start when the forward/ reverse selector is in NEUTRAL.

1. Mount the forklift using the three-point method (refer to page 18).
2. Adjust the seat (refer to page 32) and fasten the seat belt.
3. Ensure the park brake is applied.
4. Ensure the forward/ reverse selector is in NEUTRAL.
5. Ensure all hydraulic controls are in the neutral position.

## Warm Weather Starting

1. Press the accelerator pedal slightly.
2. Turn the ignition key to START. When the engine starts, release the key.
3. Check all lights and gauges. If any warning lights stay on, shut down the forklift immediately. Do not operate the forklift until it has been serviced.

**⚠ Warning**

**Do not keep the accelerator pedal fully depressed when the engine has started. Racing the engine too soon could damage the turbocharger due to insufficient lubrication.**



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## Note

After the engine starts, DO NOT use hydraulic functions for several seconds allowing oil pressure to build.

# Cold Weather Starting

1. Turn the ignition key to ON.
2. Turn the ignition key to START. When the engine starts, release the key (see chart below for cranking and idle delay times).
3. If the engine does not start, wait approximately 30 seconds and repeat step 7.
4. Check all lights and gauges. If any warning lights stay on, shut down the forklift immediately. Do not operate the forklift until it has been serviced.

## Caution

**Depending on engine and air temperature, extended cranking time and operation limited to only idle at startup for a short period may be encountered.**

## Note

Crank delay and idle delay are based on ambient operating temperature. Since idle delay begins with cranking, times may be shorter than listed in chart (Figure 42).

## Note

After the engine starts, DO NOT use hydraulic functions for several seconds allowing oil pressure to build.

| Temperature (°C) | Crank Delay (s) | Idle Delay (s) |
|---|---|---|
| -25 | 2 | 60 |
| -20 | 2 | 50 |
| -15 | 2 | 35 |
| -10 | 2 | 20 |
| -5 | 0 | 15 |
| 0 | 0 | 12 |
| 10 | 0 | 8 |
| 20 | 0 | 5 |
| 80 | 0 | 5 |

**Figure 42** - Crank delay & Idle delay

# Excessive Idling

NEVER allow the engine to idle for extended periods of time. This can result in premature wear and damge to the engine and exhaust components.

# Engine Block Heater Option

- Using a engine block heater is recommended during extremely cold conditions (below -4°F/-20°C), and if the forklift has not been operated for a prolonged period of time.
- A 120 V power supply is required.
- Before starting the engine, ensure the power cord is unplugged and safely stored.



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## Hydraulic Control Levers

- Always operate all control levers to ensure proper functioning before lifting a load (Figure 52).
- Ensure the levers move smoothly and return to their neutral positions.
- Ensure the hydraulic control lever decal is legible (Figure 53).
- While moving the hydraulic control levers, watch for jerking movement, excessive vibration, and listen for unusual noises.
- If the control levers, mast, forks, or hydraulics are not working properly in any way, do not operate the forklift until the forklift has been serviced.
- Understand the function of each control lever before operating the forklift.

## Lift Control

- Pull this lever (**A** in Figure 52) back to lift the forks and carriage. Push this lever forward to lower the forks and carriage.
- Visually inspect roller pathways between the rails while raising the mast.

## Tilt Control

- Pull this lever (**B** in Figure 52) back to tilt the mast back.
- Push this lever forward to tilt the mast.
- Refer to pages 50-52 for the proper transporting procedure.

## Side Shift Control

- Pull this lever (**C** in Figure 52) back to move the mast to the right. Push this lever forward to move the mast to the left.
- DO NOT use the sideshift function at fork elevations over 168 in (14 ft). Refer to Figure 6 on page 10 for the corresponding safety decal.

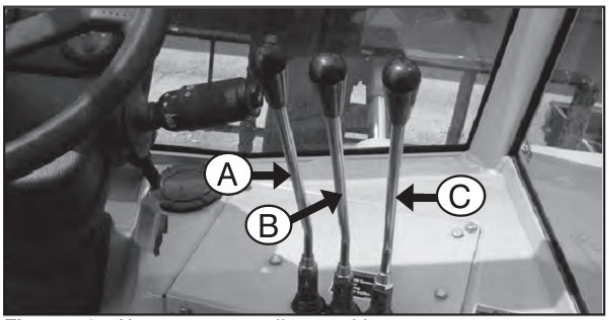



**Figure 52** Always operate all control levers to ensure proper functioning before lifting a load.

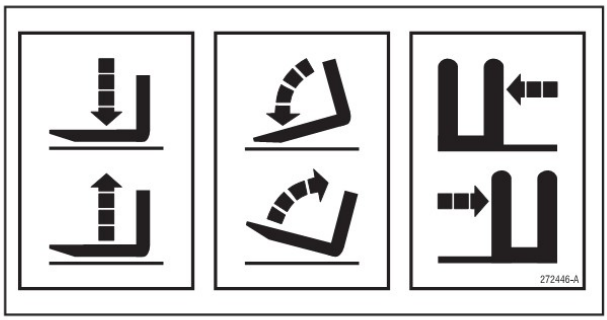



**Figure 53** Ensure the hydraulic lever decal, part # 272446-A, is legible.

### Note

While in your seat, visually inspect the cylinders for oil streaks on the rods, or leaking fittings. This indicates service is required.

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## Driving Functions Check

- While in NEUTRAL, with the parking brake and brake pedal applied, ensure the steering wheel, accelerator pedal, and brake pedal move freely.
- If the steering wheel or pedals stick or make unusual noises, do not continue with this check. Do not operate the forklift until it has been serviced.
- The brake pedal operates like an automotive brake pedal. Press fully for braking and release slowly for inching control.
- DO NOT hold down the brake pedal for prolonged periods or press it unnecessarily. This will cause premature wear and damage to the brake system.

## Checking Service Brake Operation

- Ensure the forklift is in an unobstructed area, clear of pedestrians.
- Move shift lever to forward.
- With the service brake applied, slowly apply the throttle.
- The forklift should remain completely stationary at full throttle, with the service brake applied.
- If the service brake low pressure light (located in the instrument panel) turns on during operation, do not operate the forklift until it has been serviced.

**Note**

If the forklift does not remain stationary, or if the service brakes malfunction in any way during this check, do not operate the forklift until it has been serviced.

**⚠ Warning**

**Ensure forklift is clear of all people and obstructions before starting these checks.**

**⚠ Warning**

**Operators must perform a walk-around inspection daily.**



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## Forward Driving Check

Press the brake pedal and slowly move the forward / reverse selector to FORWARD.

While slowly moving the forklift:

- Check for unusual noise or vibration.
- Ensure the forklift accelerates properly.
- Ensure the steering control works properly.
- Ensure the brakes work properly.
- Ensure you have full operating control before handling a load.

## Powershift Shifting

All shifting is controlled automatically. Two modes are available through the Powershift transmission switch located on the switch panel on the dashboard.

- When the turtle is depressed, the transmission operates in 1st gear.
- When the rabbit is depressed, the transmission shifts automatically.

Release the brake pedal and move the forklift by slowly pressing the accelerator pedal.

## Reverse Driving Check

- Press the brake pedal and slowly move the forward/ reverse selector to REVERSE.
- Release the brake pedal and move the forklift slowly with the accelerator pedal.
- Always look in the direction of travel.

While slowly moving the forklift:

- Check for unusual noise or vibration.
- Ensure the forklift accelerates properly.
- Ensure the steering control works properly.
- Ensure the brakes work properly.
- Ensure the backup alarm works properly.
- Ensure you have full operating control before handling a load.

**⚠ Warning**

**Ensure forklift is clear of all people and obstructions before starting these checks.**



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## Checking Park Brake Operation

- Check the operation of the park brake daily. The park brake indicator light will turn on when the park brake is engaged.
- When the park brake is engaged, the transmission automatically shifts into NEUTRAL, regardless of any other requested condition.
- Move the forward / reverse selector to FORWARD.
- Drive the forklift forward slowly.
- Move the forward / reverse selector to NEUTRAL.
- Apply the park brake.
- The forklift should stop.

**Note**

If the forklift does not stop, or if the park brake malfunctions in any way during this check, do not operate the forklift until it has been serviced.

## Shut-down Procedure

- Stop the forklift.
- Apply the park brake.
- Move the forward/ reverse selector to NEUTRAL.
- Lower the forks to the ground and ensure the mast is vertical.
- Turn the ignition to OFF and remove the key.
- Release the seat belt and dismount using the three-point method (refer to page 18).
- Chock the wheels if the forklift is on an incline.

**Caution**

**Allow the engine to run at idle with no load for 2 to 3 minutes before shutting down. This will allow the turbocharger to cool. Failure to follow this procedure could result in turbocharger damage.**

## Hydraulic System

- Once the forklift is shut down, check the hydraulic system after it has been under pressure. Refer to page 14 for the proper procedure.

The walk-around inspection is complete. If the forklift needs repair, tag the steering wheel, Do Not Operate! (Figure 54). Do not operate the forklift until it has been serviced. Before operating the forklift, study this section carefully. Read and follow the instructions given in this entire manual.



Figure 54



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# OPERATOR'S DAILY CHECKLIST

## SELLICK Heavy Duty Rough Terrain Forklifts

Date: _____ Operator's Name: _____
Forklift Number: _____ Supervisor's Name: _____
Hour Meter Reading: _____

*Use this checklist as a guide to the daily walk-around inspection. Always refer to the Operator's Manual for more information.*

**Check boxes accordingly:**
✓ = No problems ✗ = Needs attention or repair

| | Visual Checks |
|---|---|
| | 1. Chassis |
| | 2. Overhead Guard & Load Guard |
| | 3. Mast & Chains |
| | 4. Carriage & Forks |
| | 5. Cylinders |
| | 6. Tires |
| | 7. Hydraulic Oil Level & Leaks |
| | 8. Transmission Fluid Level |
| | 9. Air Cleaner |
| | 10. Engine Coolant Level |
| | 11. Oil Cooler |
| | 12. Battery |
| | 13. Engine Oil Level |
| | 14. Brake System Fluid Level (if applicable) |
| | 15. Operator's Platform and Cab (if applicable) |
| | **Operational Checks** |
| | 1. Instrument Panel |
| | 2. Hydraulic Controls |
| | 3. Forward Driving |
| | 4. Reverse Driving |
| | 5. Park Brake |
| | 6. Horn & Work Lights |
| | 7. Seat & Seat Belt |

**⚠ WARNING**

**If the forklift needs repair, tag the steering wheel *Do Not Operate!* Notify a service technician. Do not operate the forklift until it has been serviced.**

| Comments (explain all items needing attention or repair): |
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# Operation Safety

**⚠ Warning**

**Before operating the forklift, read and understand this operator's manual and the AEM Safety Manual, part # 272052. If anything in these manuals is unclear, seek clarification.**

- Read and understand the DANGER, WARNING, and CAUTION decals on the forklift. Replace any missing or illegible decals as soon as possible (refer to page 10 for details).
- Always wear the seat belt when operating the forklift.
- If the forklift is equipped with unfamiliar attachments or options, seek training before operating them.
- Know the rated capacity, speed range, braking and steering characteristics, turning radius and operating clearances of the forklift. Refer to the ***S Series Specification Chart*** on page 39.
- Remember that weather, soil conditions, type of terrain, and type of load can change the operating capabilities of the forklift.
- Never stand on or under the forks.
- Never allow anyone to ride on the operator's platform, forks, counterweight, or anywhere else on the forklift.
- Always be aware of your surroundings.
- Always look in the direction of travel.
- Never start the engine or operate any of the controls unless seated in the operator's seat with the seat belt properly fastened.
- Never dismount a moving forklift or leave the forklift unattended while the engine is running.
- Stop the forklift immediately if the steering or engine stops operating. Do not operate the forklift until it has been serviced.
- If the level of oil, coolant, or fuel becomes critically low, bring them to the forklift. Never drive to refill an already dangerously low oil, coolant, or fuel level.
- Always use head lights and work lamps for night work and ensure the lights are adjusted to prevent blinding an oncoming vehicle operator.
- Never attach chains, ropes, cables, etc. to the overhead guard for pulling or towing purposes. The forklift is not intended for use as a tow vehicle. If the forklift needs to be towed, refer to page 52 for the proper towing procedure.
- When leaving the operator's seat, apply the park brake, lower the forks to the ground, and turn off the ignition.
- Always keep the machine and load a minimum of 10 ft (3 m) away from power lines and conductors.



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# Operation

## Break-in Period

The forklift will provide long, dependable service if given proper care, especially during the first 50 hours of operation. During this period, follow the ***Regularly Scheduled Maintenance*** chart on page 54, and these guidelines:

- Avoid lugging the engine. Operating in too high a gear under a heavy load may cause engine/ transmission damage.
- Avoid continuous operation at a constant engine speed. Use a lower gear when moving a heavy load. Selecting the correct gear will save fuel and prolong engine and transmission life.
- Check the instruments frequently and be prepared to stop and shut down the forklift if a problem exists.
- Keep the radiator and oil reservoirs filled to the recommended levels, but do not overfill. Always follow the ***Operator's Daily Checklist***, on page 32.

After the first 50 hours of operation, follow the ***Regularly Scheduled Maintenance*** chart on page 54. If the forklift is not in proper condition, have the forklift serviced as soon as possible to prevent further damage.



**Figure 55** Dome Light

## Mounting the Forklift

- To safely mount or dismount the forklift, always face the machine and use the three-point method described on page 18.

## Seat Adjustment

- Pull up on the seat adjuster to move the seat forward or back (Figure 55).



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## Windshield Wipers

- The windshield wiper switch (Figure 41 on page 21) has three settings: the top position turns the wipers off, the center position sets the wipers low, and the bottom position sets the wipers high.

## Dome Light

- The dome light switch is located on the dome light itself (Figure 56).



**Figure 56** Dome Light

## Fan

- To turn on the fan, flip the two-position switch located on the fan itself (Figure 57).
- The fan has two speeds. To adjust the fan speed, use the dial on the heating and optional cooling switch panel (Figure 42 on page 22).



**Figure 57** Fan

## Heater

- To turn on the heater, and to adjust temperature, use the switch and dial on the heating and optional cooling switch panel (Figure 40 on page 22).

## Doors

- To operate the forklift with the doors open, swing the doors back until they catch into the rubber door holders.
- To unlatch the door, press in the button to release the catch. (Figure 50).
- To remove the doors, lift them off the hinges.



**Figure 58** Unlatching the door



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## Starting the Engine

Before starting the engine, always:

- Securely fasten the seat belt (Figure 59).
- Ensure the park brake is applied.
- Ensure the forward/ reverse selector is in NEUTRAL.
- Press down fully on the brake pedal.

***Refer to page 26-27 for warm and cold weather starting procedures***



Figure 59 Always securely fasten the seat belt before starting the engine.

**⚠ Warning**

**Never start or run the engine in a closed or poorly ventilated area where exhaust gases can accumulate. They may contain carbon monoxide that can endanger health or life if inhaled steadily for even a few minutes.**

## Moving the Machine

- Ensure the park brake is applied.
- Ensure the forward/ reverse selector is in NEUTRAL.
- Start the engine.
- Apply the brake pedal.
- Disengage the park brake.
- Move the gear shifter to the desired gear.
- Select either FORWARD or REVERSE.
- Slowly release the brake pedal.
- Slowly press the accelerator pedal to move the machine.

## Shifting On-The-Go (SS600 Transmission)

- For shifting on-the-go in FORWARD or REVERSE, press and hold the button on the end of the gear shifter.
- Move the gear shifter to the desired gear.
- Release the button to complete the shifting sequence.



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## 4WD Option

- 4WD can be engaged while moving (on-the-go shifting).
- Disengage 4WD when conditions allow for 2WD operation.
- DO NOT use 4WD on improved surfaces for extended periods. This will cause drivetrain damage.

### Note

The 4WD option should only be used when the forklift is operated on unimproved surfaces or has become immobile due to severe terrain conditions.

## Powershift Transmission Option (Standard on S150)

- The Powershift transmission switch is on the switch panel, to the left of the steering wheel.
- There are two icons on the switch - a rabbit on the top and a turtle on the bottom.
- When the turtle icon is pushed down, the transmission selection is 1st gear.
- When the rabbit icon is pushed down, the transmission shifts automatically.
- When the ignition is turned to ON, a double-beep sounds indicating the E.C.U. has been activated.
- The Powershift warning buzzer/ light signals system status and warnings to the operator.

## Forward / Reverse Selection

- To select FORWARD, move the forward / reverse lever forward; to select REVERSE, move the lever back.
- Always stop the forklift for a direction change.
- If a direction change is made while the machine speed is too high, a shift inhibit feature will prevent it from occurring. The transmission will shift to NEUTRAL.
- The directional change is allowed when the unit slows to a safe speed for the change to occur.
- To ensure safe operation and proper function of the forklift, Sellick Equipment Limited recommends always stopping the forklift before changing the direction of the machine.

### Note

Changing from low range to high range can occur at any time, but changing from high to low can occur only when stopped.

## Park Brake

- When the park brake is engaged, the transmission automatically shifts into NEUTRAL, regardless of any other requested condition.
- If FORWARD or REVERSE is selected while the park brake is engaged, the warning buzzer sounds a continuous double-beep.
- The beep stops when either FORWARD or REVERSE is deselected or the park brake is disengaged.



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## Electronic Control Unit (E.C.U.)

- The Powershift transmission system is controlled by an electronic control unit (E.C.U.).
- It controls the selection of gears and direction.
- It protects the transmission from damage due to incorrect use. The E.C.U. will not allow gear or direction changes if they do not fit preprogrammed conditions.

## Warning Buzzer/ Red Warning Light

- The warning buzzer/ red warning light (Figure 39 on page 21) signals Powershift system status and warnings to the operator.
- **DO NOT IGNORE THESE SIGNALS.**

## One double-beep sounds:

- To indicate the E.C.U. has been activated (at initial start-up or on resumption of the power supply).

## A double-beep sounds continuously if:

- The park brake is on while FORWARD or REVERSE is selected
- A direction change is attempted above the speed limitation
- A downshift is attempted above the speed limitation
- A speed sensor failure has occurred while in auto mode. The warning buzzer will sound until the ignition is turned off. When the forklift is restarted, the E.C.U. will be in ***safe mode***.

## Safe Mode

- If the speed sensor fails while in auto mode, a double-beep will sound continuously and the transmission will not shift.
- The forklift must be stopped and the ignition turned off as soon as safely possible.
- In 1st gear, a failure will not cause the buzzer to sound.
- Should a failure occur, Sellick Equipment Limited recommends that the operator shift to 1st gear manual to protect the transmission from further damage, and service the forklift immediately.

## Transmission Diagnostics

- Refer to page 71 for information regarding transmission diagnostics.

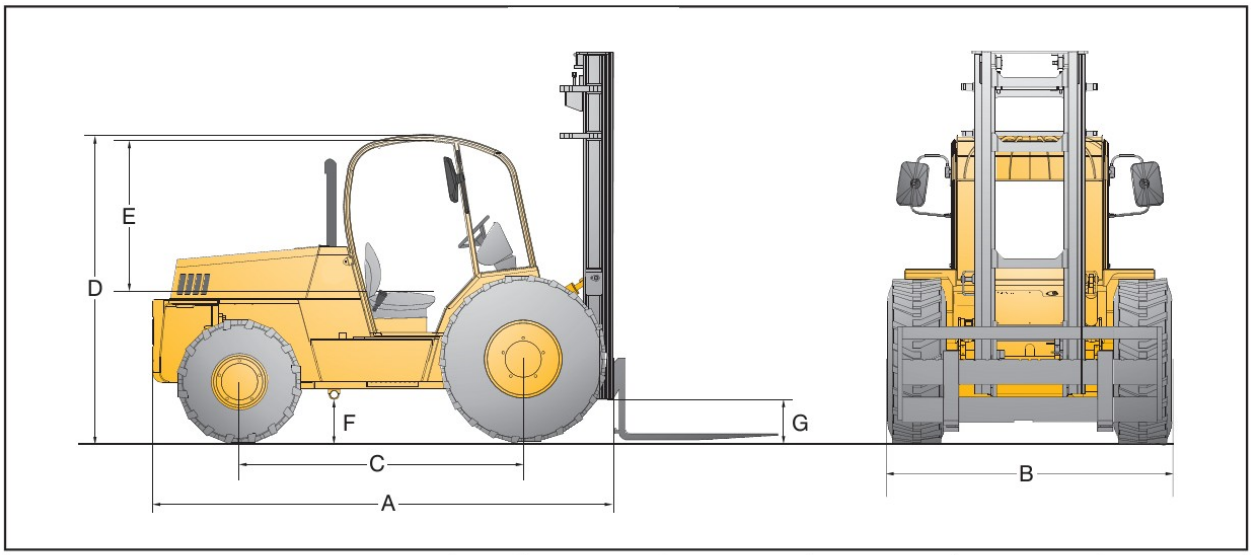


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# S Series Technical Specifications




| Specification | Ref | S60 | S80 | S100 | S120 | S150 |
|---|---|---|---|---|---|---|
| Lift capacity @ 24 inch load center | | 6000 lbs/ 2722 kg | 8000 lbs/ 3629 kg | 10000 lbs/ 4536 kg | 12000 lbs/ 5443 kg | 15000 lbs/ 6304 kg |
| Overall length (without forks) | A | 149”/3785 mm | 150”/3810 mm | 152”/3861 mm | 159”/4039 mm | 179”/4547 mm |
| Overall width | B | 89”/2261 mm | | | | 90”/2286 mm |
| Wheelbase | C | 89”/2261 mm | | | | 99”/2514 mm |
| Height to top of overhead guard | D | 95”/2413 mm | | | | 101”/2565 mm |
| Distance from seat to overhead guard | E | 43”/1092 mm | | | | |
| Outside turning radius | | 178”/4521 mm | | | 183”/4648 mm | 209”/5309 mm |
| Frame underclearance | F | 15”/381 mm | | | | 18”/457 mm |
| Mast underclearance | G | 12”/305 mm | | | | |
| Maximum vehicle speed | | 13 mph/21 kph | | | 12 mph/19 kph | 15 mph/24 kph |
| Maximum gradeability | | 25% | | | | |

**⚠ Warning**

**The forklift’s rated capacity must be adjusted to account for different load and terrain conditions.**

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# Stability

To ensure safety, a safe working load must be transported with stability, by a skilled operator, using a well- maintained forklift. Read and understand the following information about safe loads and stability.

- When working with loads, the operator must understand how the forklift remains stable.
- The S Series forklift is a ***counterbalanced forklift***. This means that it carries the load in front of the front wheels and the counterweight at the rear acts to counterbalance the weight of the load.
- These two forces create a see-saw effect in the forklift, with the front wheels acting as the fulcrum point (Figure 60).
- If the load exceeds the rated capacity of the forklift, the weight of the load will overcome the counterbalance effect and cause the forklift to tip over.
- The engineering principle used on counterbalanced trucks is called the ***stability triangle.***
- The triangle shape consists of three points: the two front wheels and the center pin of the steer axle (Figure 61).
- The forklift's ***center of gravity*** lies within the stability triangle.
- Should the center of gravity move outside of the stability triangle, the truck will tip over.
- When operating the forklift, know where the center of gravity is at all times.

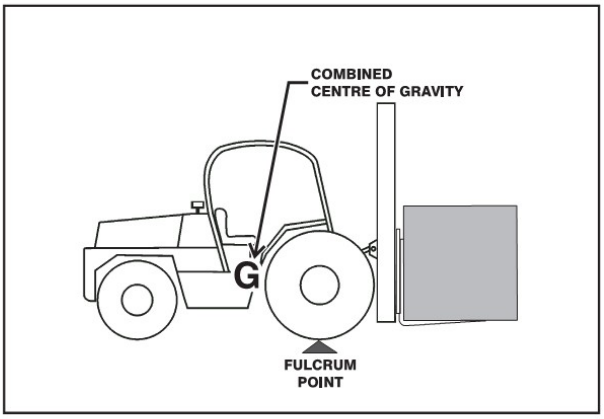



**Figure 60** The weight of the forklift (and counterweight) and the weight of the load pivot on a fulcrum point on the forklift.

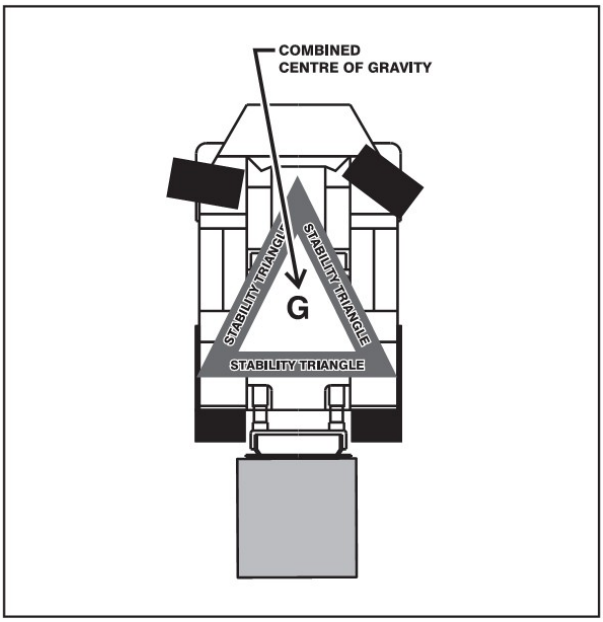



**Figure 61** The stability triangle consists of three points: the two front wheels and the center pin of the rear axle.

**SAFE WORKING LOAD**
The maximum weight that can be transported at each lift.

**STABILITY TRIANGLE**
The area on any forklift where the center of gravity must be so the machine is stable.

**CENTER OF GRAVITY**
The point in the stability triangle where the weight of the forklift and the load is balanced on all sides.

**COMBINED CENTER OF GRAVITY**
The center of gravity of the forklift and the load.



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# Loads

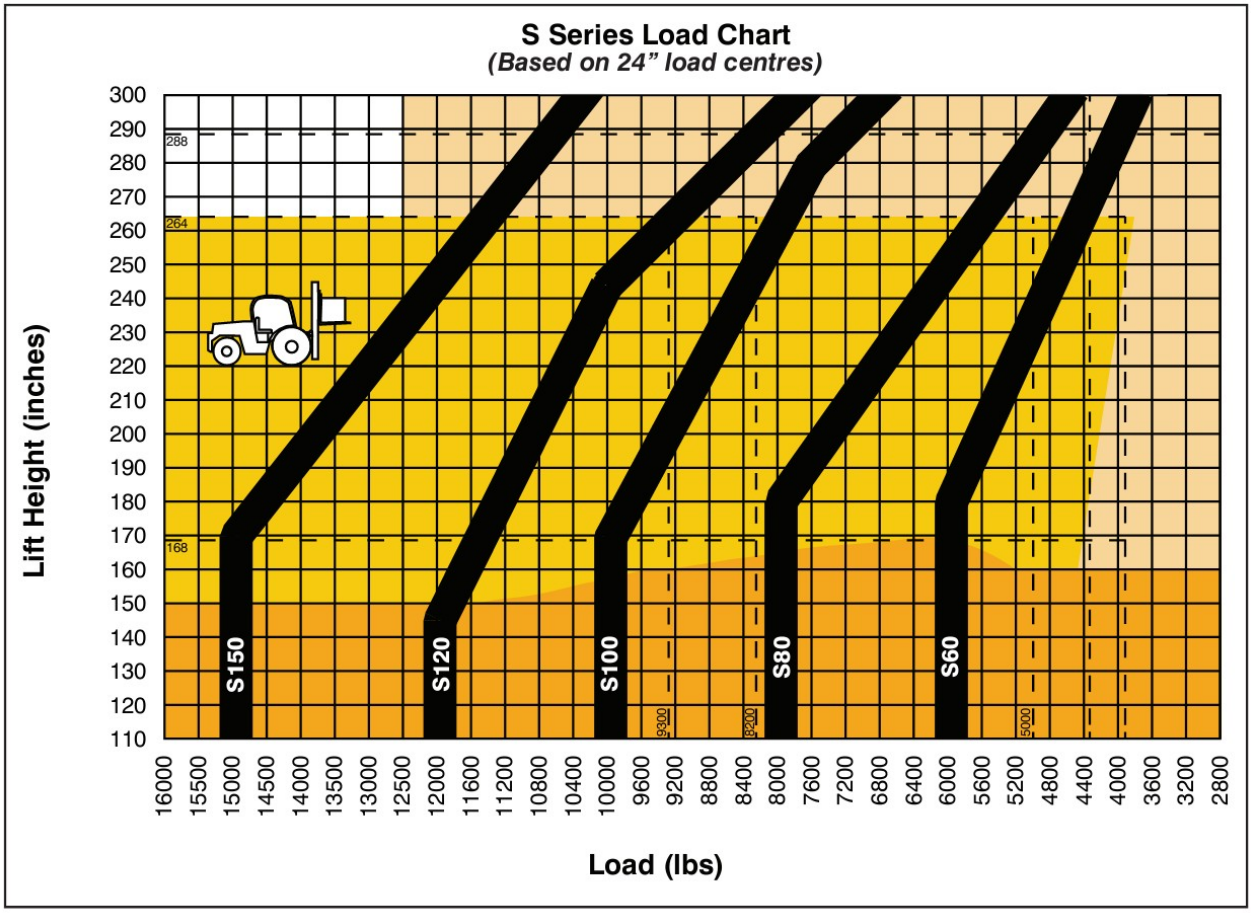



**Figure 62** The S Series load chart illustrates the maximum weight that can be lifted at specific heights - the lighter the load, the higher it can be lifted. Never exceed the rated capacity of the forklift - it will become unstable and tip over.

## ⚠ Warning

**The forklift's rated capacity must be adjusted to account for different load and terrain conditions.**

A safe working load is the maximum weight that can be transported at each lift.

- Although the S Series forklifts have a rated capacity of 6000 - 15000 lbs @ 24" load center (depending on the model), the capacity must be adjusted to account for different types and sizes of loads and different terrain conditions.
- To keep the forklift stable, a safe operator must understand how the center of gravity changes with different mast positions, load weights and sizes, and terrain conditions.



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## Position of Mast and Load

- Carry all loads as low as possible, because stability decreases as loads are raised.
- Only raise or sideshift a load when the forklift is at a complete stop on level ground.
- Never sideshift a fully raised load. This may cause the forklift to tip over because the centre of gravity may move outside the stability triangle. Refer to figure 6 on page 10 for the corresponding safety decal.
- Properly secure all loose loads before lifting them.
- For maximum stability, always travel with the forks at the lowest height that provides adequate ground clearance (Figure 63).
- Always properly balance a load on the forks (Figure 64).
- To balance a load, space the forks equally from the center of the carriage and set them as far apart as the load or pallet allows.
- To adjust the forks, raise them 4-6 inches above the ground, turning the fork lock pins and sliding the forks to the desired position.
- Release the fork lock pins so they drop into the nearest slot on the carriage.
- Ensure all pins are locked to prevent forks from moving (Figure 65).

## Weight of Load

- The weight of the load affects the stability of the forklift.
- The weight of attachments added to the carriage decreases the maximum load capacity of the forklift.
- Always obtain information on the use of unfamiliar attachments before operating them with a load.

**Note**

Only mount Sellick-approved attachments or options to the forklift.



**Figure 63** Travel with the forks as low as possible.



**Figure 64** Always properly balance a load on the forks.

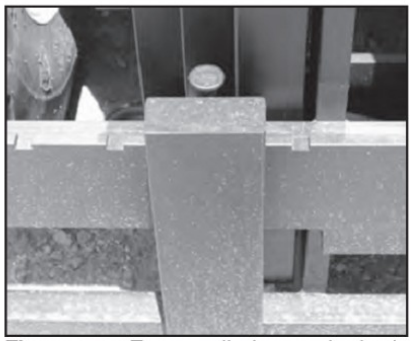


**Figure 65** Ensure all pins are locked to prevent forks from moving.

**Warning**

**Always transport a load with forks as low as possible for maximum stability and visibility.**



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## Terrain

- Terrain conditions change the stability of the forklift. For example an oversized load carried across muddy terrain decreases the forklift's stability, and changes the speed and steering characteristics.
- A skilled operator understands how changes in terrain change the stability of the forklift.
- Always check the conditions of the job site when carrying loads.
- Ensure the surface is clear of debris and will support the forklift and its load.
- Ensure the mast will pass under overhead wires or cables, and through doorways.

## Inclines

- Always attempt to avoid travelling on an incline.
- Remember that the center of gravity moves as the forklift drives up or down a slope.
- When travelling on an incline is necessary, follow the correct procedure.

## With a Load

- Always drive up and reverse down an incline when carrying a load (Figure 66).
- Never travel with the load pointed down because the centre of gravity will move outside the stability triangle and tip the forklift forward (Figure 67).
- Make direction changes slowly, with due regard for surface, load type, and rear end swing of the forklift.
- Avoid sudden stops when carrying a load, especially in the forward direction; the forklift will stop but the load may not.

## Without a Load

- When driving without a load, always drive down and reverse up an incline (Figure 68).
- Never turn on an incline; this may cause the forklift to tip. Proceed to the bottom of the incline and turn safely on a level surface.

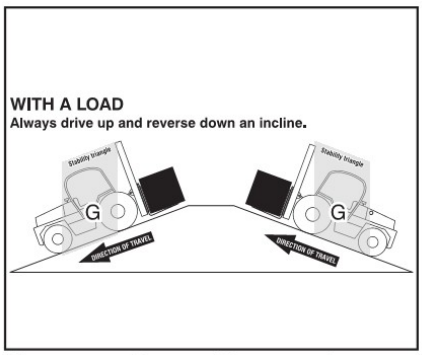



**Figure 66** Always drive up and reverse down an incline when loaded, so the combined centre of gravity stays inside the stability triangle.




**Figure 67** Never travel with a load pointed down. The centre of gravity is outside the stability triangle and the forklift will tip over.

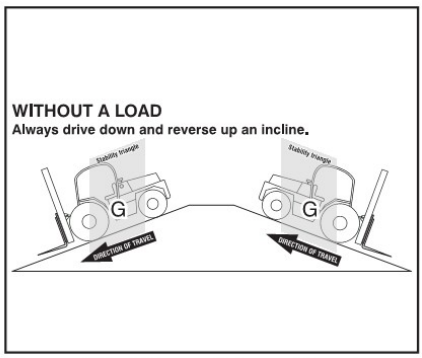



**Figure 68** When driving without a load, always drive down and reverse up an incline.

**Warning**

**Never turn the forklift on an incline; this may cause it to tip.**

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## Travel Procedures - No Load

- DO NOT make sudden turns or quick movements when operating the forklift (with or without a load).
- Always approach slowly and sound the horn at aisles and other locations where vision is obstructed.
- Always check overhead clearance of the forklift, especially indoors.
- When operating the forklift on public roads, comply with provincial, state, and local laws governing highway safety by using approved warning devices and accessory lights such as: flags, slow-moving vehicles sign, and lights. Keep these devices clean and in good working order.
- Always keep the forklift in the travel position, described below, when moving.

## Travel Position

- When travelling with a load, carry it as low as possible.

## Lifting Safety

- DO NOT attempt to lift loads in excess of the forklift's rated capacity; refer to the serial number plate inside the operator's compartment (Figure 69). Lifting an excessive load will make the forklift dangerously unstable and will cause damage to machine components.
- DO NOT lift double-tiered or stacked loads because they are unstable and difficult to control. Instead, break the load into two or more lifts.
- Always remember that an overhead guard is intended to offer protection from the impact of small packages, bagged material, boxes, etc. It is not intended to withstand the impact of a falling capacity load.
- Ensure each load is stable and secure before lifting. Check the weight and load center of the load. If the weight is not marked, check the weight of the load with a supervisor or have it weighed.
- If there is any indication of instability while lifting a load, stop immediately. Lower the load and restack or break it into two or more lifts.
- Tilt the mast back when lifting and travelling with a load. DO NOT tilt the mast forward with a load in a raised position; this could cause the load to fall.
- Never walk under a raised load. Everyone, including the signal person, should remain at a safe distance from the forklift at all times.
- Always approach carefully and fully engage the forks when lifting, lowering, or travelling with a load.




**Figure 69** Serial number plate

**Warning**

**The forklift is intended as material-handling equipment; not as a personnel lift. DO NOT use the forklift to lift personnel.**



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# Lifting Loads on the Ground

The following techniques apply to stable loads on the ground:

1. Move the forklift slowly and carefully into position and engage the load squarely, with the forks spaced as far apart as the load permits (Figure 70).
2. Ensure forks pass cleanly under the load, then move forward until the load touches the carriage (Figure 71).
3. Tilt the mast back, then lift the load smoothly (Figure 72).
4. The lift and tilt cylinder speeds are controlled by the engine speed. The higher the RPM of the engine, the faster the mast will lift and tilt.
5. To increase the RPM of the engine while still in gear, press and hold the button on the end of the shifter. This declutches the transmission, and allows increased engine RPM without moving the machine.
6. Carry the load as low as possible while still maintaining ground clearance (Figure 73).



**Figure 70** Engage the load squarely.



**Figure 71** Move forward slowly until the carriage touches the load.

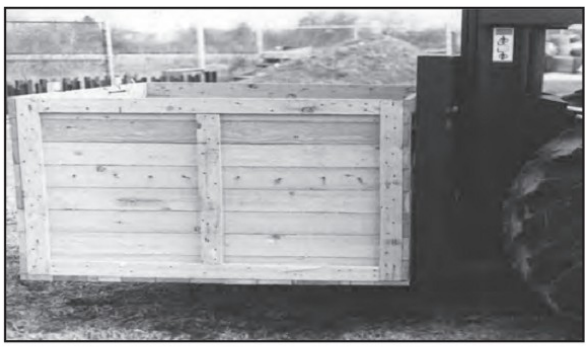


**Figure 72** Tilt the mast back, then lift the load.



**Figure 73** Carry the load as low as possible.



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## Lifting Loads Above Ground Level

The following techniques apply to loading and unloading stacked loads or loads on a truck or trailer:

1. Remember: DO NOT lift double-tiered or stacked loads because they are unstable and difficult to control. Instead, break the load into two or more lifts.
2. Raise the carriage to the appropriate height for the load.
3. Approach the load squarely, ensuring the forks are centered until they fully engage the load (Figure 74).
4. DO NOT allow the mast to make contact with the truck or trailer at any time.
5. Sideshift the mast to center the load on the forks.
6. Raise the forks to lift the load clear of the area.
7. Tilt the mast back to stabilize the load (Figure 75).
8. Back away slowly, looking in the direction of travel, to a clear area.
9. Never turn the forklift with a raised load.
10. Lower the load as close to the ground as possible.
11. Back away and drive slowly, looking in the direction of travel (Figure 76).



**Figure 74** Approach the load squarely.



**Figure 75** Tilt the mast back to stabilize the load.



**Figure 76** Back away slowly, looking in the direction of travel.

**⚠ Warning**

**Never lift a load in excess of the forklift's rated capacity; this will make it dangerously unstable and cause damage to machine components.**

**⚠ Warning**

**Check the weight and load centre of the load. If the weight is not marked, check the weight of the load with a supervisor or have it weighed.**



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## Double Forking

When lifting a load, if it is impossible to fully engage the forks, then the load must be positioned closer before lifting. This is known as ***double forking***.

1. Raise the carriage to the appropriate height for the load.
2. If the load is located on a truck or trailer, do not allow the mast to make contact with the truck or trailer at any time.
3. Approach the load squarely, ensuring the forks are centred, and engage the load as much as possible.
4. Sideshift the mast to center the load on the forks.
5. Tilt the forks back and raise the load slightly.
6. Back up slowly to position the load closer.
7. Lower the load and tilt the forks back to the horizontal position.
8. Fully engage the forks by moving the forklift forward again.
9. The load can now be lifted.

## Lifting Drums or Other Round Objects

- When lifting drums or other round objects, use extra care to avoid losing or spilling the load.
- Always use wood or metal blocking to ensure the drum does not move (Figure 77).
- Tilt the mast forward and slide the fork tips along the ground to get under the drum.
- Tilt the mast back slightly to cradle the drum before lifting.
- Drums with large ribs may be lifted in an upright position (Figure 78). Forks must be spaced accurately for a safe grip under the drum ribs.



**Figure 77** Always block a drum before lifting.



**Figure 78** Forks must be accurately spaced if picking up a drum in the upright position.

**⚠ Warning**

**The lift capacity of the forklift is reduced if the forks are not fully engaged.**

**Caution**

**Use extra care when handling drums or other round objects to avoid spilling the load.**



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# Travel Procedures - With Loads

- When transporting a load over rough or uneven ground, travel slowly for safe operation.
- ALWAYS use extreme caution to maintain stability on grades.
- DO NOT coast or freewheel down a slope.
- When turning or reversing, always proceed slowly and look in the direction of travel (Figure 79).
- Carry loads with the mast tilted back to cradle the load and prevent it from sliding off the forks.
- Use extreme caution when operating the forklift with a raised load. The higher the load is raised, the less stable the forklift becomes.
- Check the overhead clearance carefully before driving under electric lines, bridges, or entrance ways.
- Check the load and the forklift for front and rear clearance when turning corners.
- DO NOT sideshift while travelling or turning with a load.
- Always transport a load with the forks as low as possible for maximum stability and visibility.
- Check the ground surface and site conditions to ensure they will support the forklift and the load.
- Travel in reverse when carrying oversized loads for improved visibility. Remember that a load may be wider than the forklift.
- When making sharp turns, keep close to the inside corner and begin the turn when the inside drive wheel aligns with the corner (Figure 80).
- Keep as far as possible from the stockpile when turning a sharp corner (Figure 81).



**Figure 79** When turning or reversing, always proceed slowly and look in the direction of travel.



**Figure 80** Keep close to the inside corner, when making a sharp turn.



**Figure 81** Keep as far as possible from the stockpile when turning a sharp corner.



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## Placing Loads

1. Check the landing point and surrounding area to ensure it is clear of debris and can properly support the load (Figure 82).
2. Move the forklift into unloading position.
3. Tilt the load forward until horizontal and directly over the landing point, then lower the load to the ground (Figure 83).
4. Tilt the forks slightly forward to deposit the load.
5. Reverse the machine carefully to disengage the forks from the load (Figure 84).
6. Back away from the load carefully, always looking in the direction of travel.



**Figure 82** Ensure the landing point is clear and can support the load.



**Figure 83** Tilt the load forward until horizontal and directly over the landing point, then lower the load.



**Figure 84** Reverse carefully to disengage the forks from the load.



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## Unloading Above Ground Level

1. Check the landing point and surrounding area to ensure it is clear of debris and can properly support the load.
2. Approach the landing point as squarely and as closely as possible.
3. Tilt the forks until the load is horizontal and directly over the landing point.
4. Lower the load.
5. Move the forward / reverse selector to REVERSE.
6. Tilt the forks slightly forward to clear the load and carefully back away, always looking in the direction of travel.
7. When the load is clear, stop the forklift and lower the forks to travelling height.
8. Drive away slowly, always looking in the direction of travel.

## Overhead Wires

- Overhead wires are an electrocution hazard (Figure 85).
- Always keep the forklift and the load at least 10 ft (3 m) away from power lines and conductors.



**Figure 85** Overhead wires are an electrocution hazard.

## Transporting Safety

- When transporting the forklift, ensure the mast is fully lowered and the park brake is applied.
- Comply with provincial, state and local laws governing highway safety by using approved warning devices and accessory lights. Keep these devices clean and in good working order.
- Comply with local laws governing maximum heights of trucks and trailers.
- Never move or drive a trailer with a forklift on the back until the tie-down chains are in place and properly secured.
- Always yield the right of way to ambulances, fire trucks, and other emergency vehicles.
- DO NOT tow the forklift with the mast tilted forward.



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## Overhead Clearance

- Always check overhead clearance when transporting the forklift. Overhead clearance refers to the total height of the forklift and the trailer (Figure 86).
- Calculate the overall lowered mast height first. This is the height of the mast when it is tilted forward for shipping. To calculate, use the following formula:

0.707 x LH + 2" = overall lowered height (S60-S120)
0.940 X LH + 2" = overall lowered height (S150)

***For LH, use the measurement shown on the mast serial number plate, located on the right side of the mast (A in Figure 87).***

To calculate overhead clearance, use the following formula:

Overall lowered height + trailer height
= overhead clearance (Figure 86)

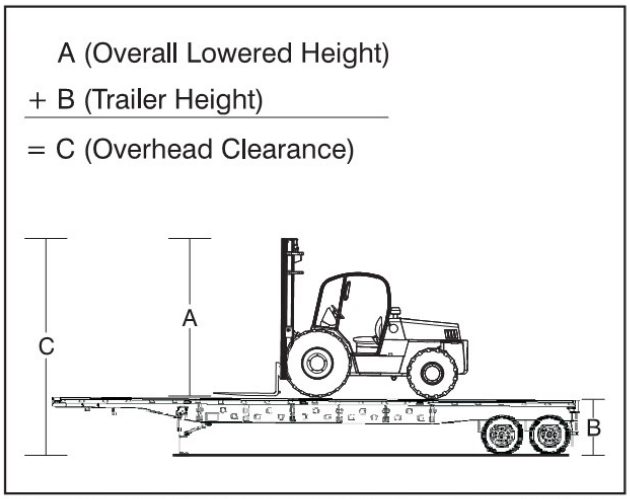



**Figure 86** Overhead clearance refers to the total height of the forklift and the trailer.

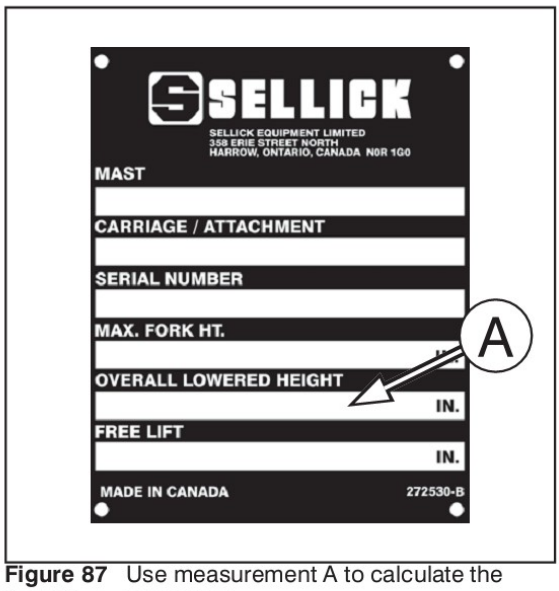



**Figure 87** Use measurement A to calculate the forklift's overall height.

## Note

Always ensure overhead clearance is less than the provincial or state maximum.

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# Towing the Forklift

The forklift must only be towed short distances, at very low speeds, in an ***emergency situation.***

- The forklift should never be pushed. Pushing will cause damage to the frame, drive components, and fuel or hydraulic tanks.
- If the engine oil, coolant or fuel levels become critically low, bring them to the forklift; never drive the forklift to them.
- When towing, use signs that conform to all highway regulations.
- Before attempting to tow the forklift, have a trained and authorized repair technician determine if it can be towed without causing more damage.
- Only tow the forklift with the appropriate capacity tow vehicle.

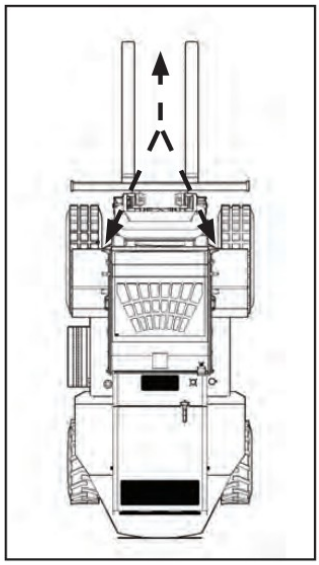


**Figure 88** Two chains are required for towing and should be attached as shown.

**Towing Procedure:**

1. Tow the forklift in a forward-facing position, if possible.
2. Place the forward / reverse selector in NEUTRAL (Figure 89)
3. Disconnect the driveshaft(s).
4. Ensure parking break is released (Figure 90).
5. Only attach chains to the front axle. Attach a chain to the rear axle only if absolutely necessary. Machine damage may result if chains are attached to other locations on the forklift.
6. Two chains are required for towing and should be attached as shown (Figure 88).

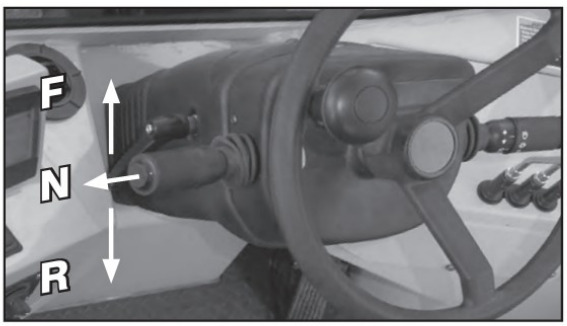



**Figure 89** Shifter is in neutral position.



**Figure 90** Parking break is released.



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# Preventive Maintenance and Service

Performing regularly scheduled maintenance and preoperational inspections increases the life of the forklift and creates a safe working environment.

- Always service the forklift according to the ***Regularly Scheduled Maintenance*** chart (refer to page 54 for service intervals).
- The operator should warn the service department of service requirements. In turn, the service department should advise the operator on any point of service or driving that is incorrect. The employer must be aware of the need for adequate service time and facilitate forklift maintenance.
- Always observe proper daily maintenance and repair of all pivot pins, hydraulic cylinders, hoses, snap rings, and main attaching bolts before operating the forklift.

Before Servicing the Forklift:

1. Park the forklift on level ground.
2. Apply the park brake (Figure (91)
3. Place the forward / reverse selector in NEUTRAL.
4. Lower the forks to the ground.
5. Turn off the ignition.

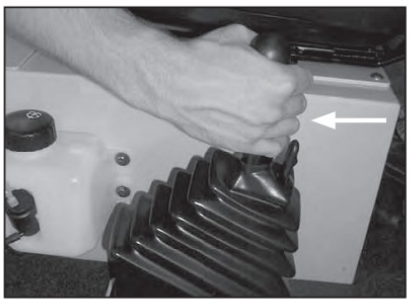


**Figure 91** Park break is applied.

## Note

The service intervals in the ***Regularly Scheduled Maintenance*** chart on the following page, are the maximum allowable, and in extreme conditions of dust, heat and cold, the intervals should be scheduled accordingly.



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## Regularly Scheduled Maintenance - S Series w/ Ecomax T4

SELLICK

***NOTE:*** *The following intervals must not be exceeded. Maintenance must be completed at the hourly interval or the calendar equivalent - which ever occurs first.*

| | | Every 10 Hours | Every 50 Hours | Every 100 Hours | Every 500 Hours | Every 1000 Hours | Every 1500 Hours | Every 2000 Hours | Every 8000 Hours |
|---|---|---|---|---|---|---|---|---|---|
| | Adjust and lubricate mast chains, load roller thrust buttons & side thrust rollers on carriage. | ● | ● | ● | ● | ● | ● | ● | ● |
| | Check all wheel nuts for tightness. Tighten if necessary. | ● | ● | ● | ● | ● | ● | ● | ● |
| | Check all hydraulic hoses & fittings for leaks or damage. Replace required parts. | ● | ● | ● | ● | ● | ● | ● | ● |
| | Check engine oil level. | ● | ● | ● | ● | ● | ● | ● | ● |
| | Check engine coolant level & quality. | ● | ● | ● | ● | ● | ● | ● | ● |
| | Check for coolant and oil leaks. | ● | ● | ● | ● | ● | ● | ● | ● |
| | Check transmission oil level. | ● | ● | ● | ● | ● | ● | ● | ● |
| | Check fuel lines and clamp bands. | | ● | ● | ● | ● | ● | ● | ● |
| | Check sedimenter for contamination and drain. | | ● | ● | ● | ● | ● | ● | ● |
| | Check battery electrolyte level. | | ● | ● | ● | ● | ● | ● | ● |
| | Check front and rear wheel hub oil level. | | | ● | ● | ● | ● | ● | ● |
| | Check parking brake cable and adjust if necessary. | | | | ● | ● | ● | ● | ● |
| | Check all electrical components and replace if necessary. | | | | ● | ● | ● | ● | ● |
| | Change transmission filter. | | | | ● | ● | ● | ● | ● |
| | Change rear axle oil (4WD). | | | | ● | ● | ● | ● | ● |
| | Grease drive shafts. | | | | ● | ● | ● | ● | ● |
| | Change hydraulic oil filter. - ***CHANGE AT FIRST 50 HOURS*** | | | | ● | ● | ● | ● | ● |
| | Change engine fuel filter. | | | | ● | ● | ● | ● | ● |
| | Change engine oil & filter.[1] | | | | ● | ● | ● | ● | ● |
| | Check fan belts. | | | | ● | ● | ● | ● | ● |
| | Check radiator hoses & clamp bands. | | | | ● | ● | ● | ● | ● |
| | Change hydraulic oil. | | | | ● | ● | ● | ● | ● |
| | Remove sediment in fuel/hydraulic tanks. | | | | ● | ● | ● | ● | ● |
| | Change front axle oil. (center housing and hubs) | | | | | ● | ● | ● | ● |
| | Change transmission oil. | | | | | ● | ● | ● | ● |
| | Change air cleaner element (outer).[2] | | | | | ● | ● | ● | ● |
| | Clean transmission strainer | | | | | ● | ● | ● | ● |
| | Change crankcase ventilation filter. | | | | | | ● | ● | ● |
| | Change air cleaner element (inner). | | | | | | | ● | ● |
| | Clean suction strainer. | | | | | | | ● | ● |
| | Check and adjust engine valve clearance. | | | | | | | ● | ● |
| | Drain and fill cooling system. | | | | | | | ● | ● |
| | Check oil filter and dipstick o-rings. Replace if necessary. | | | | | | | ● | ● |
| | Change fan belts. | | | | | | | | ● |
| | Change injectors. | | | | | | | | ● |
| | Change injectors - leak off rail.[3] | | | | | | | | ● |
| | Change high pressure fuel lines.[3] | | | | | | | | ● |

**Calendar Equivalents:** 10 Hours = Daily | 50 Hours = Weekly | 500 Hours = 6 Months | 1000 Hours = Yearly

**NOTE: For specific information on increased intervals affected by types of fuel, additives in fuel, adverse or dusty working conditions, please see the respective component service manuals.**

[1] If operating under strenuous conditions, do an engine oil flush every 250 hours. Change the engine oil and filter every 250 hours.
[2] If operating in dusty environments, clean and replace the air filter more frequently.
[3] These jobs must be completed by a trained technician.

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# Preventive Maintenance and Service Safety

- Always wear safety goggles when servicing or repairing the forklift.
- DO NOT attempt to straighten, weld, or otherwise repair the overhead guard, mast structure or forks if damage has occurred. These parts must be replaced entirely.
- If the mast must be raised to work on the side or front end of the forklift, ensure that it is fully supported and blocked by means of an overhead crane. Do not allow anyone to stand or walk under a raised mast.
- Never lubricate or make mechanical adjustments while the unit is in motion or when engine is running. Keep hands clear of fan and belts.
- Never make repairs or tighten hydraulic hoses or fittings when the system is under pressure, when the engine is running or when hydraulic cylinders are under load.
- Minor preventive maintenance outlined in the following section may be done by the operator, unless otherwise noted.
- Any other maintenance or major service must be performed by a trained service technician.
- Keep all equipment free of dirt and oil. Clean oil, grease, mud, ice, or snow from the floor of the operator's platform and stepping points. Keep a soft cloth handy to wipe the work lights and rear tail brake lights of excess dirt.
- Always keep the brakes and hydraulic steering system in good working order.
- Keeping the forklift clean will make it safer to operate, and make leaks or damage easier to detect.

**⚠ Warning**

**Always use brass drift and hammer when servicing or replacing pins in cylinder ends, buckets, etc. Failure to do so could result in injury from flying fragments.**

**⚠ Warning**

**Service all grease points at the recommended service intervals. Refer to page 83 - 84 for grease point locations.**

**⚠ Warning**

**Always observe proper maintenance and repair of all pivot pins, hydraulic cylinders, hoses, snap rings, and main attaching bolts before each day's operation.**

**⚠ Warning**

**After completing each regularly scheduled maintenance interval, perform the daily inspection. Refer to the Operator's Daily Checklist on page 32.**



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# Preventive Maintenance Procedures

The S Series forklift is equipped with a Tier 4 Final, common rail diesel engine. In addition to regular maintenance procedures, there are several points to pay close attention to when performing maintenance on a common rail engine.

## Fuel Type - Ultra Low-Suplhur Diesel Fuel Only

- Using an incorrect fuel type can cause extensive damage to the engine as well as damage to the exhaust gas recirculation (EGR) system. This can lead to a shorter life of the forklift and costly repairs.
- Ensure the engine never runs out of fuel. This can also cause extensive damage to the fuel system.
- Refer to ***Fluid Types and Capacities*** chart on page 86 for the correct types and quantities of fluids.

## Fuel System - Contamination

- Using incorrect fuel types and poor maintenance can lead to contaminants entering the fuel injectors preventing the injectors from closing completely. This could cause severe damage to the engine.
- It is crucial that the machine is thoroughly cleaned before attempting any maintenance on the engine and surrounding area.
- Contaminants in the fuel pump can lead to excessive wear and leakage. Common contaminants can be classified as follows:
    - Solid: metallic particles, wear particles, fibers, sand, sealing materials etc.
    - Liquid: water, incompatible oils and chemicals etc.
    - Gasses: sulphur dioxide & air can create corrosive compounds if dissolved in water.

### Note

For more information regarding the diesel engine, refer to ***Ecomax T4 User's Handbook (#272938)***.

### ⚠ Warning

**Before performing any maintenance or service where fumes may be present, make certain there is adequate ventilation and light.**



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## Common Rail Fuel System Safety

- The system operates at pressures up to 29400 psi. Do not “crack” the high pressure fuel lines to bleed the system. Follow the procedure on page 58.
- Follow the procedures outlined in this manual and the ***Ecomax T4* User’s Handbook (#272938)**.
- Ensure the engine and surrounding area has been thoroughly cleaned before attempting any maintenance on the engine.
- Disconnect the positive (+) and negative (-) battery terminals before performing any welding on the machine.
- Ensure all new parts are available before attempting to replace any existing parts.
- Never use steam to clean the electronic control unit (ECU).
- Avoid contact with the ECU connector pins. This will prevent electrostatic discharge and possible damage to the ECU.
- Careless or frequent removal of fuel injection system components for inspection or cleaning generally does more harm than good.
- Debris may enter the exposed connections and the equipment may be mishandled through lack of design knowledge.
- Various components are made with extreme precision and may be easily damaged when removed.
- All injection pumps should be calibrated and repaired at authorized service stations, unless factory-trained personnel are available with proper tools and test equipment.
- High pressure fuel lines should never be reused.
- If the rail pressure sensor or high pressure valve is faulty, a new common rail assembly must be installed. It is not possible to replace these components individually without the risk of fuel leaks.
- Service must be done by proper trained personnel only.



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# Eliminating Air From Diesel Fuel System (Bleeding)

- If air enters the fuel system, it can cause problems such as difficult engine starting and unstable engine running.
- Air can enter the system if:
  - The fuel filter has been drained or changed
  - The fuel tank is empty during normal operation
  - The low pressure fuel lines are loose or disconnected

1. Turn on the machine starter switch to start the fuel lift pump A (see figure 92). DO NOT start the engine. Allow the pump to run for a minimum of 30 seconds.
2. Turn off the machine starter switch to stop the fuel lift pump. Wait a minimum of 10 seconds then turn the starter switch to start the pump. DO NOT start the engine.
3. Repeat step 2 twice more before starting the engine.
4. Start the engine and make sure it runs smoothly

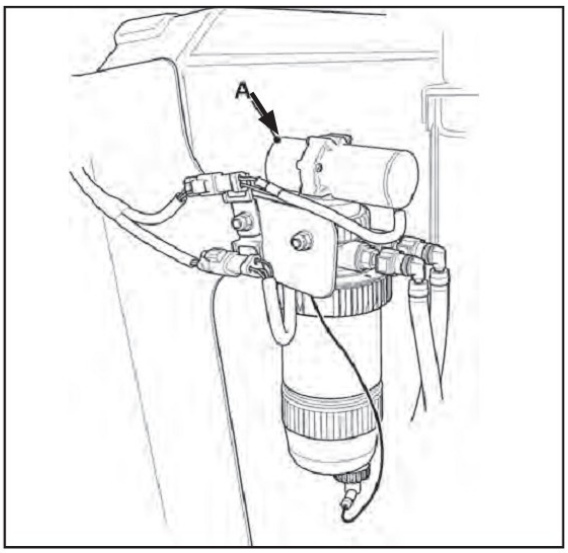



**Figure 92** Bleeding the fuel system.

## Note

***Important***: DO NOT attempt to bleed the high pressure fuel system by loosening high pressure pipe connections even when the engine is not running. To bleed the fuel system follow the procedure outlined in Figure 92.

## ⚠ Warning

**Fine jets of fuel at high pressure can penetrate the skin. Keep face and hands clear of pressurized fuel and wear protective glasses. If fluid penetrates your skin, get medical help immediately.**

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## Fuel Filters

- Clean fuel is a ***must*** for operation. Extreme conditions, when clean fuel is not available, may require additional filters to provide longer filter change periods.
- The fuel filter element is the paper type; ***never*** attempt to clean it. Always replace the element when periodic maintenance is being carried out.
- The period for changing the element depends largely on the quality and condition of the fuel available. Under normal conditions, replace the element every 500 hours. This period should be decreased if the fuel is contaminated.

## Changing the Filter Element

1. Turn off the engine and remove key.
2. Thoroughly clean the outside of the filter housing and around the filter head.
3. Loosen drain tap **B** (see Figure 93) and allow water/ fuel to drain into a suitable container.
4. Unscrew the filter element counter clockwise using the dedicated tool **C** (part #235350) (see Figure 93).
5. Lightly oil the element seals and install a new filter **A** (see Figure 93). Ensure the filter flange touches the filter head. Use the dedicated tool **C** (part #235350). Tighten to a torque of 22.13 ft lbs (30 N m).
6. Bleed the fuel system (see Figure 92).

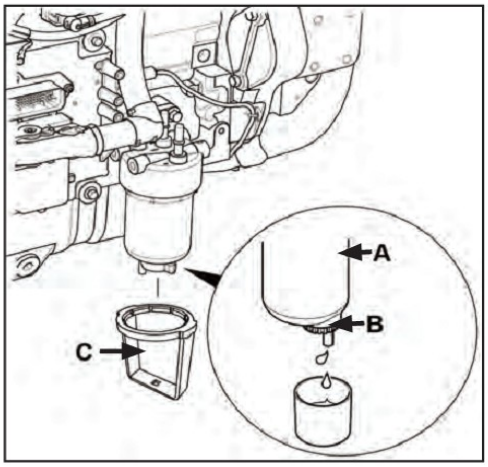



**Figure 93** Changing the fuel filter element.

**⚠ Warning**

**Always replace the fuel filter element.** NEVER **attempt to clean it.**

**⚠ Warning**

**Discard the used filter and fuel oil in accordance with local regulations.**

**Caution**

**Running the engine with air in the system could damage the fuel injection pump. After any maintenance, remove air from the fuel system.**



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# Draining the Water Separator and Fuel Filter

If the light on the instrument panel stays lit, water or contamination has entered the water separator. The light will reset once the water has been removed.

1. Turn off engine and remove key.
2. Drain off any water in the element **A** by turning tap **B** (see Figure 94).
3. Drain off any water in the water separator bowl **A** by turning tap **B** (see Figure 95). DO NOT disconnect the water in fuel electrical connector **C** (see Figure 95).
4. If any sediment is visible in the bowl after draining, hold the bowl and release the locking ring **D** (see Figure 95).
5. Wash the bowl in clean fuel.
6. Replace the bowl and secure by turning locking ring **D** (see Figure 95).

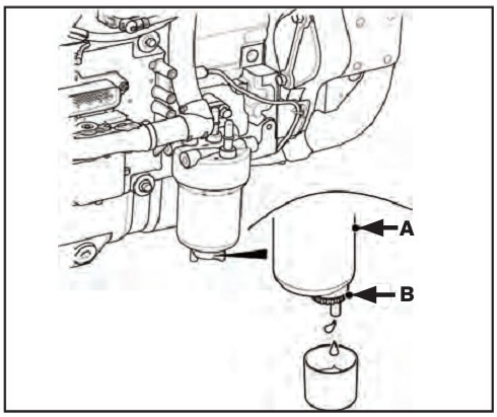



**Figure 94** Water separator.

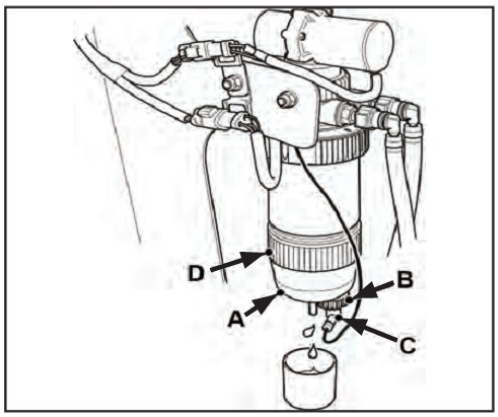



**Figure 95** Fuel electrical connector.

## Note

If the engine runs smoothly for a short time, and then begins to run roughly or stops, check again for air in the fuel system. Check all seals and connections, especially in the low pressure side of the system.

## Note

If no fuel is moved when the fuel lift pump priming lever is operated, then the pump diaphragm may have rested in a maximum lift position. To move the diaphragm, use the starter key to turn the engine, then try the priming lever again.

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# Changing the Water Separator Filter

The period for changing the filter depends on the quality and condition of the fuel available. Under normal conditions, replace the filter every 500 hours. This period should be decreased if the fuel is contaminated.

1. Drain the water separator by opening the drain valve on the bottom of the water separator.
2. Remove electrical connector **D** from bowl (see Figure 96).
3. Turn locking ring **B** to release filter **A**.
4. Discard filter in accordance with local regulations.
5. Place new filter into position and secure in place by turning locking ring **B**.
6. Replace water separator bowl **C** and secure in position.
7. Reattach electrical connector **D** to bottom of bowl.
8. Make sure drain valve is closed.

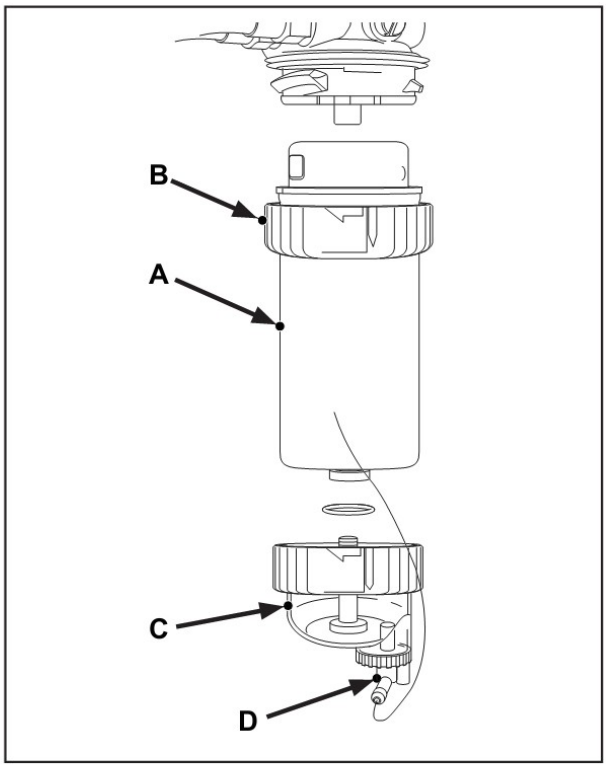



**Figure 96** Water separator filter.

## Note

If replacement of the water separator filter is required, first ensure that NO dirt is allowed to enter the fuel system. Make sure all areas are clean before removing the element.

## Note

Upon startup, water in fuel light on instrument panel should extinguish after a few seconds. If light does not go out, seek service attention immediately.

## Note

DO NOT allow dirt to enter the fuel system. Before disconnecting any part of the fuel system, thoroughly clean around the connection. When a component has been disconnected, always cap or plug any holes to prevent dirt from entering. Failure to follow these instructions will lead to dirt entering the fuel system. Dirt in the fuel system will seriously damage the fuel injection equipment.

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## Draining the Fuel Tank

- To drain the fuel tank, unscrew the plug at the bottom of the fuel tank (**A** in Figure 97).

## Engine Oil

- Check the engine oil level daily.
- Wait a minimum of 5 minutes after the engine has been turned off.
- The engine oil dipstick is located under the hood, on the right side of the engine (**A** in Figure 98).
- Always check the level using the dipstick; the level must be between the lower and upper marking (Figure 99).
- To add oil, remove the oil cap (**B** in Figure 98) on top of the engine and fill as required. Do not overfill. This will cause engine damage.
- Replace the engine oil cap and clean spilled oil.
- Refer to ***Fluid Types and Capacities*** chart on page 86 for correct type and quantity of engine oil.

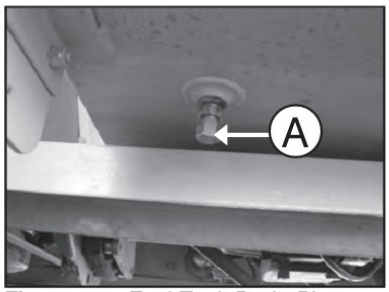



**Figure 97** Fuel Tank Drain Plug (A).

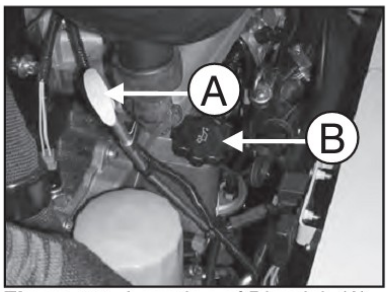



**Figure 98** Location of Dipstick (A) and Oil Filler Cap (B).

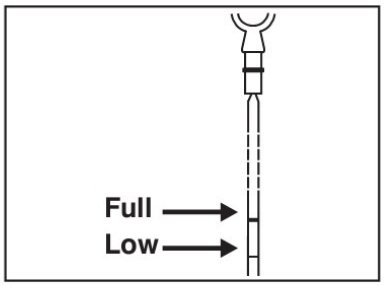



**Figure 99** The engine oil level must be between these two marks.

**Caution**

**Use only a strap wrench to remove the locking ring on the separator.**

**Warning**

**Fine jets of fluid at high pressure can penetrate the skin. Keep face and hands clear of pressurized fluid and wear protective glasses and gloves. If fluid penetrates skin, seek medical help immediately.**



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# Changing Engine Oil and Filter

Before changing the engine oil and filter, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward / reverse selector is in NEUTRAL.
- The ignition is off.

Change the engine oil and filter every 500 hours.

1. Place a suitable container under the drain plug (**A** in Figure 100).
2. The oil should be at normal operating temperature when foreign material is in suspension. Drain the oil by removing the drain plug (**A** in Figure 100) and O-ring at the bottom of the oil pan. Replace O-ring if damaged.
3. Reinstall the plug and O-ring when the oil finishes draining. Tighten to 30-44 ft lbs (40-60 N m)
4. Place a suitable container below oil filter plug (**E** in Figure 101) and loosen and remove plug. Let the oil fully drain. Replace plug. Torque to 30-44 ft lbs (40-60 N m).
5. Unscrew the filter canister (**F** in Figure 101) and dispose.
6. Clean the seal face of the filter head (**G** in Figure 101).
7. Smear the seal (**H** in Figure 101) on the new filter canister with clean engine oil.
8. Screw in the new filter canister to hand-tight only.
9. Through filler point (**B** in Figure 101), fill the engine with the recommended oil to the MAX mark on the dipstick (**A** in Figure 101). Wipe off any spilled oil, refit the filler cap and make sure it is secure.
10. Operate the engine until oil pressure low warning light turns off. Check for oil leakage. When the oil has cooled, check the level again and, if necessary, top up with clean engine oil. Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of engine oil.

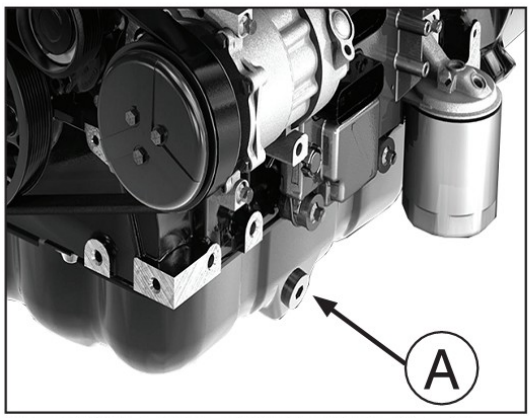



**Figure 100** Location of Oil Pan Drain Plug (A).

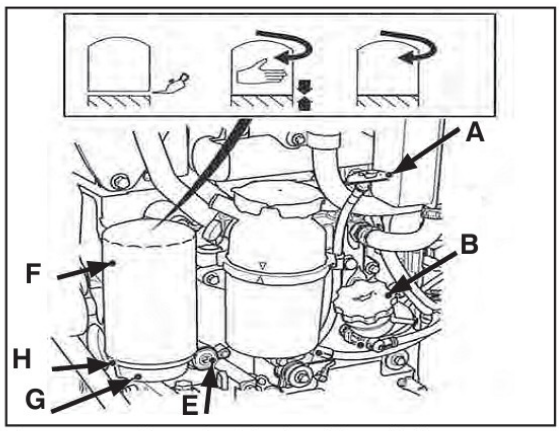



**Figure 101** Changing Engine Oil and Filter.

**Warning**

**Discard the used filter and fuel oil in accordance with local regulations.**

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## Engine Crankcase Ventilation

The filter element of the engine crankcase must be changed every 1500 hours.

## Changing the Filter Element (Figure 102)

Before changing the crankcase filter element, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward/reverse selector is in NEUTRAL.
- The ignition is off.

1. Rotate the filter cover **A** counter clockwise and remove.
2. Lift out the filter element **B** and discard it.
3. Clean the inside of the filter housing **C**. Ensure to remove all oil and sludge contamination.
4. Ensure that the oil drain in the bottom of the filter housing is free from sludge and debris.
5. Insert a new filter element **B**.
6. Match up the arrows on both parts to install the filter cover **C**.

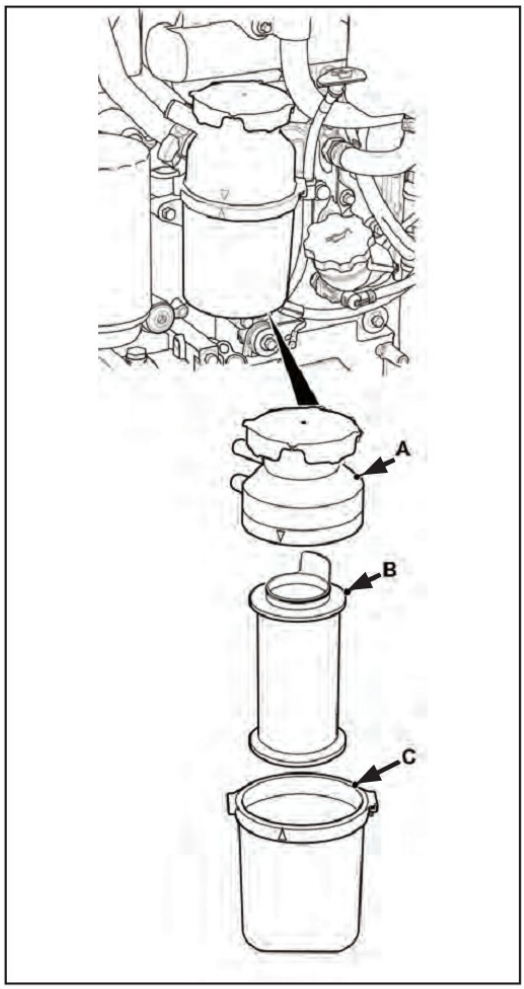



**Figure 102** Engine Crankcase Ventilation Filter

### Note

Ensure the correct type of filter element is installed.

## Hydraulic Oil

- The hydraulic tank is located on the left side of the forklift.
- Check hydraulic oil at operating temperature, with all cylinders in their neutral positions and the engine off.
- Cycle the control levers to release pressure.
- Use the sight gauge to check the hydraulic oil level (Figure 103). The level should register between the two lines on the sight gauge. If not, fill to the required level.
- Always clean spilled oil.
- Never reuse hydraulic oil. Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of hydraulic oil.

### Caution

**Never reuse hydraulic oil**



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## Changing Hydraulic Oil

Before changing the hydraulic oil, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward/ reverse selector is in NEUTRAL.
- The ignition is off.

Change the engine oil and filter every 600 hours.

1. Place a suitable container under the hydraulic tank and remove the filler cap.
2. Remove the drain plug (**A** in Figure 104) from under the tank and let the oil drain.
3. Replace the drain plug and fill with the correct grade of hydraulic oil. Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of hydraulic oil.



**Figure 103** Hydraulic Oil Sight Gauge

## Changing Hydraulic Oil Filter

Before changing the oil and filter, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward/ reverse selector is in NEUTRAL.
- The ignition is off.

Change the hydraulic oil filter every 300 hours. Begin by loosening the filler cap on the hydraulic tank to remove any air pressure. Re-tighten filler cap.

1) Turn filter counter-clockwise to loosen and remove (Figure 105). Discard filter.

2) Prepare the new filter by placing new oil lightly on the filter seal .

3) Place new filter under head and thread clockwise until snug. Tighten according to instructions on filter. DO NOT overtighten.

Complete maintenance instructions by starting the engine and cycle the hydraulics. Check for leaks and top up the hydraulic oil level if required.

Refer to the ***Fluid Types and Capacities*** chart on page 86 for quantity and type of hydraulic oil.

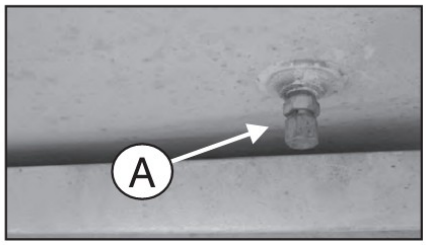



**Figure 104** Hydraulic Tank Drain Plug (A)



**Figure 105** Location of hydraulic filter.

**Caution**

**Discard the used filter and oil in accordance with local regulations.**

**Warning**

**Always release hydraulic tank pressure using the filler cap AND ensure filler cap is tight to prevent significant oil loss when changing the filter.**



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# Cleaning the Hydraulic Suction Strainer

Before changing the hydraulic suction strainer, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward/ reverse selector is in NEUTRAL.
- The ignition is off.

Remove and clean the hydraulic suction strainer every 2000 hours. The suction strainer is located inside the hydraulic tank.

1. Cycle all hydraulic control levers to release pressure. Ensure all levers are in their neutral positions.
2. Before draining, place a suitable container under the hydraulic tank and remove the hydraulic filter cover.
3. Remove the drain plug from under the tank and let the oil drain completely.
4. Loosen and remove the hose running from the hydraulic pump to the elbow fitting.
5. Remove the elbow fitting from the strainer.
6. Unscrew and remove the suction strainer from the hydraulic tank.
7. Clean the suction strainer using a suitable solvent or compressed air.
8. Place ***Loctite 345*** on the suction strainer threads end and screw it into the hydraulic tank until tight.
9. Replace and tighten the elbow fitting.
10. Replace the hose.
11. Reinstall the drain plug.
12. Refill the tank to the appropriate fluid level. Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of hydraulic oil.
13. Replace the hydraulic filter cover and hand tighten.
14. Start the engine and check for leaks.
15. Recheck the hydraulic oil level and fill if necessary.



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## Cooling System

- Keep the cooling system filled with a rust inhibitor or anti-freeze solution. If the anti-freeze does not contain a rust inhibitor, then one should be added.
- Check the level daily, using the radiator overflow bottle, located under the hood on the left side of the forklift.
- When the engine is cold, the coolant level should reach the lower mark (**A** in Figure 106).
- Always ensure the engine is cold when adding coolant or refilling the system. Refer to Figure 13 on page 10 for the corresponding safety decal.
- Use a 50% solution of ethylene glycol coolant in water. When adding fluid, clean spills if they occur.
- Replace cap securely.
- Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of coolant.
- Keep the radiator fins clean of dirt to allow free air passage.

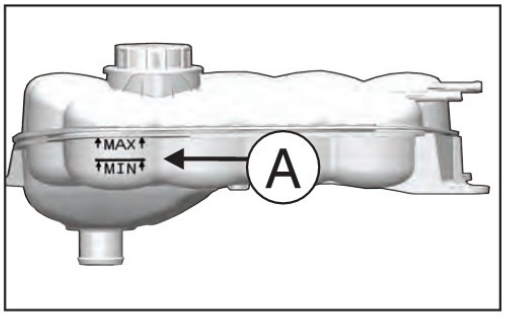



**Figure 106** When the engine is cold, the coolant level should reach the lower mark (A).

**⚠ Warning**

**The cooling system operates under pressure. It is dangerous to remove the cap while the system is hot. Always turn the cap slowly to the first stop and allow the pressure to escape before removing the radiator cap completely.**

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# Draining and Flushing the Cooling System

Before draining and flushing the cooling system, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward/ reverse selector is in NEUTRAL.
- The ignition is off.
- The engine is cold.

Drain and flush the radiator and engine block every 2000 Hours or 2 years.

1. Place a suitable container under the radiator drain valve (**A** in Figure 107), located on the right side of the forklift under the radiator shroud.
2. Remove the radiator cap (**A** in Figure 108) and open the drain valve to drain the radiator.
3. Disconnect the bottom radiator hose (**B** in Figure 108) and allow the coolant to drain.
4. Flush water through the system by placing a water hose in the radiator fill neck. When the water flowing from the bottom radiator hose is free of discolouration and sediment, stop flushing with water and allow the system to drain.
5. Reconnect bottom radiator hose securely.
6. Close radiator drain valve.
7. Slowly refill the system with anti-freeze until the coolant level is at the appropriate level on the overflow bottle (refer to Figure 106 on page 67).
8. Clean the radiator cap and cap seal.
9. Install the radiator cap.
10. Run the engine until it reaches normal operating temperature, then turn it off.
11. Recheck the coolant level and add coolant as required.

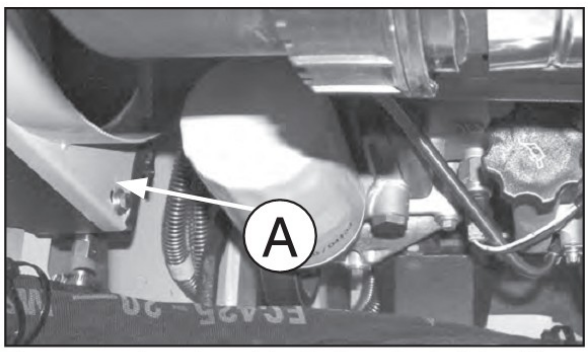



**Figure 107** Location of the Radiator Drain Valve (A)

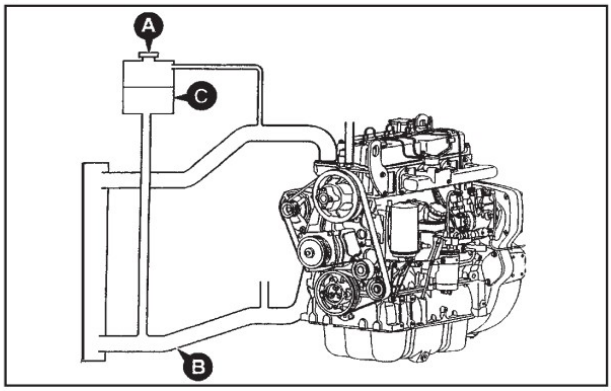



**Figure 108** Draining and Flushing the Cooling System

**Warning**

**DO NOT operate the forklift if the engine temperature exceeds 220° F (104°C).**



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## Transmission

- The S60-S120 forklifts can be built with two different transmissions: The standard Syncro Shuttle transmission (SS600) or the optional Powershift transmission (PS750).
- The S150 forklift comes fitted with a standard Powershift transmission (PS750).

Before working on ***any*** transmission, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward/ reverse selector is in NEUTRAL.
- The ignition is off.
- Check the transmission fluid daily.

## Checking Transmission Fluid Levels

- When the fluid is cold, it should reach the full mark on the dipstick.
- If engine has been running, wait five minutes before checking the fluid level.
- The SS600 and 2WD Powershift transmission dipstick is located on the right side of the forklift. The 4WD Powershift dipstick is located on the left side of the forklift.

### Note

If the transmission temperature is not hot enough to check level, perform the stall test below.

## Performing Stall Test

Follow these procedures to ensure your transmission oil temperature reaches the 180° - 200° F temperature **REQUIRED** for checking daily levels.

1. Block all wheels to secure movement.
2. Depress service brake and hold.
3. Start engine and put directional control lever in FORWARD.
4. Slowly increase engine speed to approximately 1/2 throttle and hold for NO MORE than 30 seconds.
5. Watch gauge on dashboard to ensure it reaches the required temperature.

### Note

For service information regarding the transmissions used in the S Series and S150 forklift, choose from the publications listed below.

| Part # | Description | Machine Affected |
|---|---|---|
| 231507 | SS600 Trans. Service Manual | S Series (S60-S120) |
| 272259 | PS750 Trans. Service Manual | S Series and S150 (2WD) |
| 272825 | PS750 MK IV Trans. Service Manual | S Series and S150 (4WD) |



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# Transmission Fluid Fill Procedure

See ***Fluid Types and Capacities*** on page 86 for correct type and quantity of transmission fluid.

1. With the forklift stopped, fill the transmission with the recommended fluid to the dipstick maximum mark. DO NOT overfill; this will damage the transmission.
2. If any fluid has spilled, clean the area.
3. Start the engine and run it for five minutes. This allows the fluid to fill the filter, pump, torque converter, oil cooler and hoses.
4. Recheck the fluid level and fill to the dipstick maximum mark, if required.

# Changing the Transmission Filter

Before draining and flushing the transmission system, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward/ reverse selector is in NEUTRAL.
- The ignition is off.

Change the transmission filter every 300 hours.

***Note: For the PS750 MK IV transmission (4WD option), change the filter after the first 100 hours. Then every 300 hours as regular maintenance.***

1. Clean the filter area.
2. Place a suitable container under the filter.
3. Remove, drain, and discard the filter.
4. Coat the seal on the new filter with transmission fluid (Figure 110).
5. Screw the filter in place. DO NOT overtighten. This filter must be screwed on until it contacts the filter head. Then, tighten the filter 3/4 of a turn by hand, which is equal to 11 ft lbs (15 N m) torque.
6. Check the transmission fluid level (refer to page 69 for the proper procedure).
7. Check for leaks.
8. Recheck the transmission fluid level.

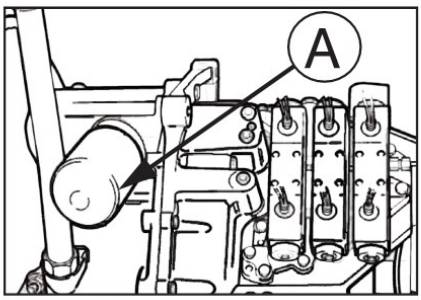



**Figure 109** Location of Transmission Filter.



**Figure 110** Coat the seal on new filter with transmission fluid.

**Warning**

**Discard used transmission fluid and filter in accordance with local regulations.**



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## Changing the Transmission Fluid

Before changing the transmission fluid, ensure:

- The forklift is parked on level ground with the park brake is applied.
- The forward/ reverse selector is in NEUTRAL and the ignition is off.
- The engine is cold.

Change the transmission fluid and clean the suction strainer every 600 hours.

1. Place a suitable container under the suction strainer.
2. Remove bolts **B** and pull out the suction strainer **A** to drain the transmission fluid (Figure 111).
3. Clean the strainer by washing it in a suitable solvent.
4. Refit suction strainer with new gasket **C**, apply Loctite 242 to bolts and tighten to 7.4 ft lbs (10 N m).
5. Refill the transmission with the correct grade of transmission fluid. Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of transmission fluid.

### Note

When the strainer is removed, fluid will flow quickly out. Keep to one side when removing the suction strainer.

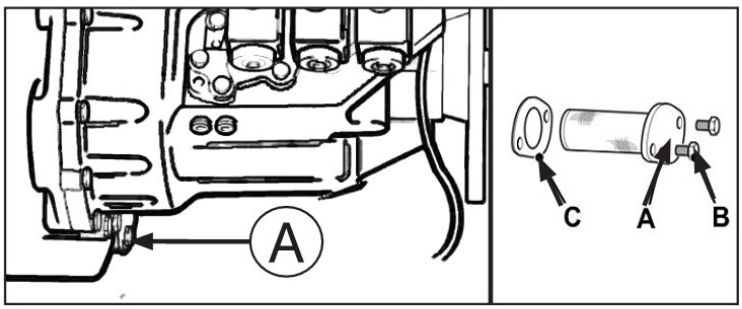



**Figure 111** Remove suction strainer to drain transmission fluid.

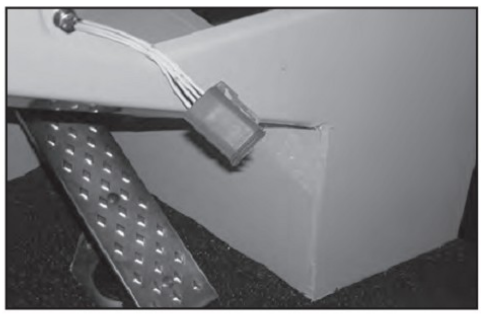


**Figure 112** PS750 connector in dash.

## Transmission Diagnostics - Powershift (PS750)

- Diagnostic information is available by downloading information to a laptop computer.
- Contact the Sellick Service Department for diagnostic hardware or software.
- The PC is plugged directly into the connector located in the electrical panel (Figure 112).
- Only qualified, trained personnel should test, diagnose or service a PS750 transmission.

When diagnosing the forklift, always ensure:

- The forklift's test area is clear of other personnel and objects.
- The PC is secure inside the operator's compartment.
- The operator is always looking in the direction of travel.

### Note

The forklift must be OFF when connecting and disconnecting the laptop computer or test unit. Always use caution when diagnosing a moving forklift.

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## Battery

- Batteries contain sulfuric acid can produce explosive gases.
- Follow the instructions below to prevent personal injury.
- Wear eye, hand, face, and skin protection.
- Keep all sparks & open flames away.
- Following the manufacturer's instructions, shown on battery.
- To access the battery, remove the four fasteners located in each corner of the cover panel. Refer to Figure 113A & 113B for battery locations.
- A positive remote charging post is located under the hood.

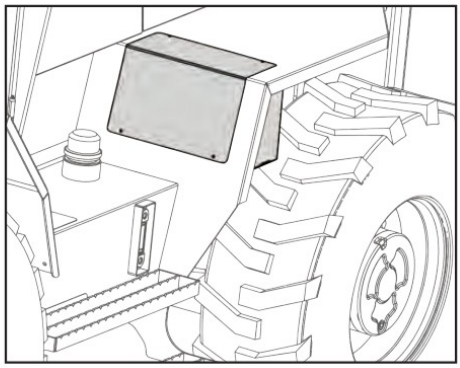


**Figure 113A** Battery location (S150)

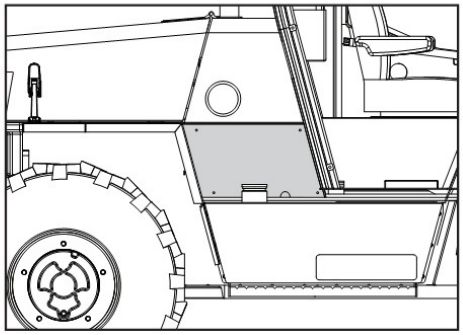


**Figure 113B** Battery location (S Series)

## Cleaning Battery

1. Remove the vent plugs to check the electrolyte level in the battery (Figure 114). If the level is low, fill the cells to the bottom of the filler neck. Use distilled water only.
2. Ensure the breathing holes in the vent plugs are not plugged.
3. Reinstall the vent plugs.
4. Ensure the battery cables are tight and clean. Protect the terminals from corrosion with a light application of petroleum jelly.

### Note

Ensure vent plugs are tight to prevent any cleaning solution from entering the cells.

### Note

Before performing maintenance on the battery, remove the battery ground cable first. When reconnecting the battery, connect the battery ground cable last.

### ⚠ Warning

**Batteries give off explosive gases. To avoid injury or battery damage, always keep sparks and open flames away from the battery. Always wear eye and skin protection.**

### ⚠ Warning

**Always have adequate ventilation while charging or using a battery. Always wear eye and skin protection.**

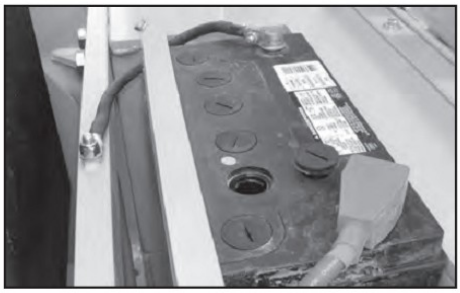


**Figure 114** Remove the vent plugs to check the electrolyte level in the battery.



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## Tires

- Inflating and servicing tires can be dangerous.
- Only trained and authorized personnel should service tires and wheels.
- To avoid personal injury, adhere to the following safety precautions:
- Check tire pressure from the tread side only; never check pressure from the tire side (Figure 115).
- DO NOT reinflate a tire that has been seriously under inflated or run flat until it has been inspected for damage by a qualified person.
- Always inflate tires in a safety cage or other portable safety device.
- DO NOT weld, braze, or otherwise repair a damaged rim. Do not use a damaged rim. The rim must be entirely replaced.
- DO NOT inflate a tire unless the rim is mounted on the forklift or secured firmly so it will not move if the tire or rim should suddenly fail.
- Tires must be properly inflated to obtain maximum tire life. Underinflating or overinflating tires causes deterioration, slippage, and failure.
- Before operating the forklift, check tires for proper inflation and report cuts, cracks, gouges, or abrasions immediately.
- For an accurate pressure reading, check tire pressure only when tires are cold.
- When required, replace tires with OEM-approved tires.
- Never inflate tires over the recommended pressure.
- Check the wheel nuts daily for tightness.



**Figure 115** Always check tire pressure from the tread side, never the tire side.

### Note

Always inflate tires to the manufacturer's specifications.

### Note

Refer to the wheel nut torque decal, located on the tire rim, for accurate torque information.

### ⚠ Warning

**Inflating and servicing tires can be dangerous. Only trained and authorized personnel should service tires and wheels.**



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## Mast Lubrication and Maintenance

Before adjusting and lubricating the mast chain and load roller thrust buttons, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward / reverse selector is in NEUTRAL.
- The ignition is off.

Adjust and lubricate the mast chain and load roller thrust buttons every 50 hours.

- Check the mast chains for tightness.
- The mast rails should be vertical, the fork heels should touch the ground, and the chains should be evenly taut (Figure 116). Adjust as required.
- Check and lubricate the mast chain rollers.
- Check the chains for pliability and apply chain and cable lube.
- Check the carriage and rails for excessive side to side movement.

## Mast/Carriage Side Thrust Adjustment

- If the mast sections or carriage become loose from side to side through normal wear, adjust the side thrust screw.
- These screws are located in the centre of each side thrust roller (Figure 117), and can be adjusted without disassembling the mast.

1. Loosen the side thrust rollers.
2. Tighten the screw (**A** in Figure 117) until the side thrust button (**B** in Figure 117) is snug against the mast rail. Then, loosen the screw a 1/2 turn.
3. Raise the mast to full lift height with no load. If the mast appears to stick in any position, loosen the screw another 1/2 turn.
4. Repeat step 3 until the mast operates freely. Both sides should be tightened equally.
5. Tighten the side thrust rollers only enough to contact the rail. DO NOT overtighten.



**Figure 116** The mast chains should be evenly taut.

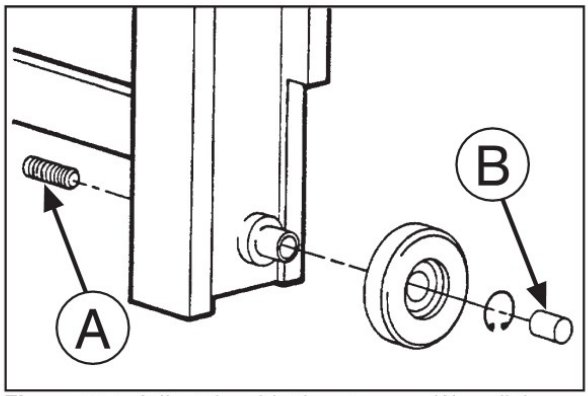



**Figure 117** Adjust the side thrust screw (A) until the side thrust button (B) is snug against the rail.



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## Belt - Inspection

A spring-loaded tensioning unit (**A** in Figure 118) keeps the front end accessory drive belt (**B** in Figure 118) at the correct tension. Inspection for belt wear daily and replacement every three years is the only adjustment required.

- Park the forklift, set the park brake and remove the key from the ignition.
- Inspect the belt for wear. Replace the belt if it has cracks or is frayed in any way (**C** in Figure 118).

## Belt - Replacement

- Make sure machine is off and key is removed from ignition.
- Place a 16 mm socket on the hexagon spigot nut (**D**) and rotate the tensioner in the direction shown in Figure 118.
- Keep holding the tensioner against the spring force and lift the belt off the drive tensioner pulley.
- Slowly release the spring force by rotating the tensioner unit in the opposite direction.
- Before placing the new belt, check that the tensioner roller and the fan pulley rotate smoothly and that there is no play in the bearing.
- Fit the new belt using the reverse of procedures outlined above.

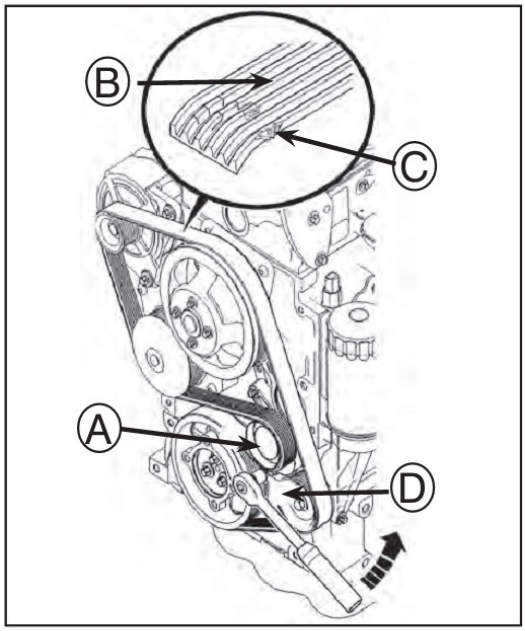



**Figure 118** Location of the belts (A), alternator bracket bolts (B), and pivot bolts (C).

**Caution**

**DO NOT use excessive force to rotate the tensioner or damage to it will occur.**

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# Fuses and Relays

- Fuses and relays are located behind the left dash panel cover and near the rear of the engine under the hood.
- To access the fuses and relays in the operator compartment, turn the dial on the cover and remove.
- If a fuse blows, always find out the reason before installing a new one.
- In the S Series forklift, one 60 Amp fuse (Figure 119) is located under the hood on the right side of the forklift, next to the water separator. Refer to the fuse panel diagram (Figure 120).

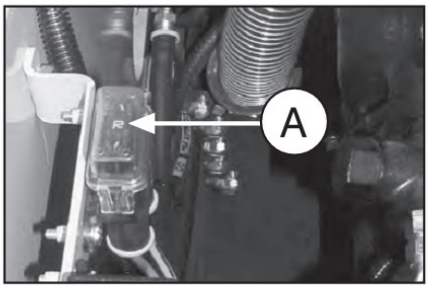



**Figure 119** 60 Amp Fuse

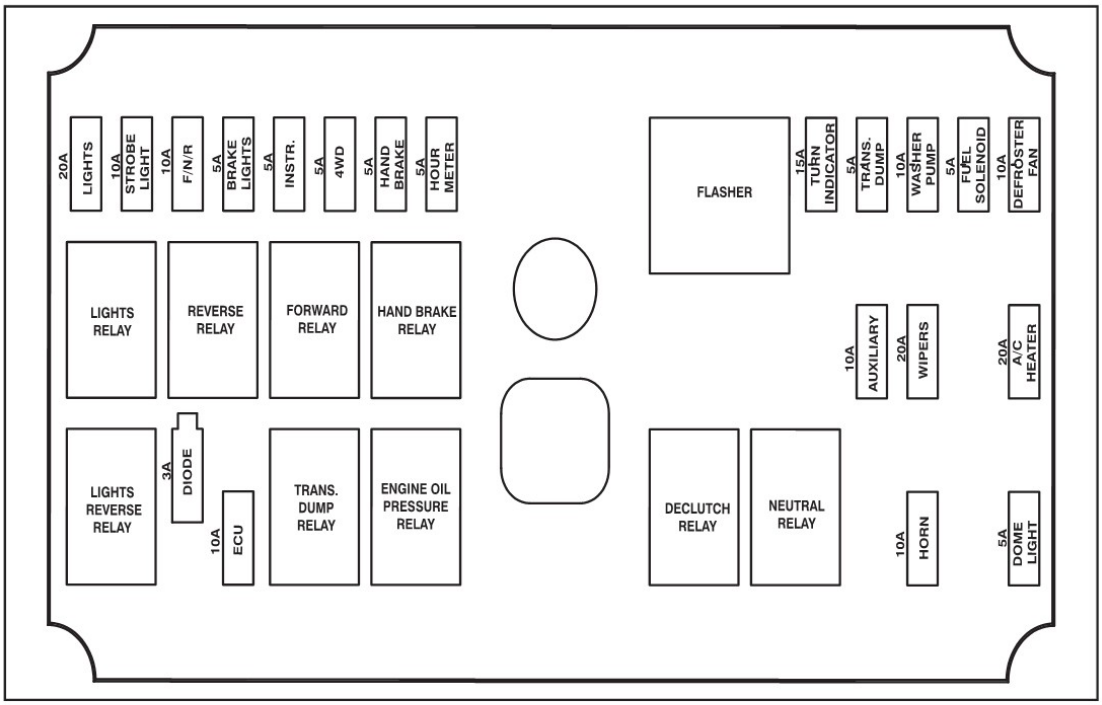



**Figure 120** Operator compartment fuse panel layout.

## Note

Never use a fuse with a larger amperage rating than recommended by the manufacturer.

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# Fuses and Relays

## Engine Fuse and Relay Panel (Figure 121 & 122).

This panel is located under the hood of the forklift. It is mounted near the rear of the engine. To access the panel, remove the four screws holding the cover down (Figure 121). If a fuse blows, always find the reason before attempting to replace it.

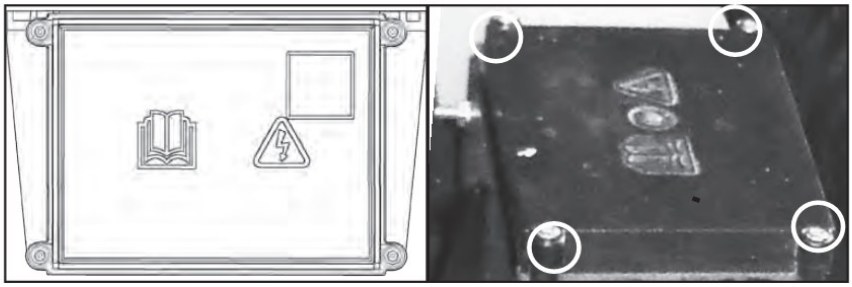


**Figure 121** Engine Fuse Panel

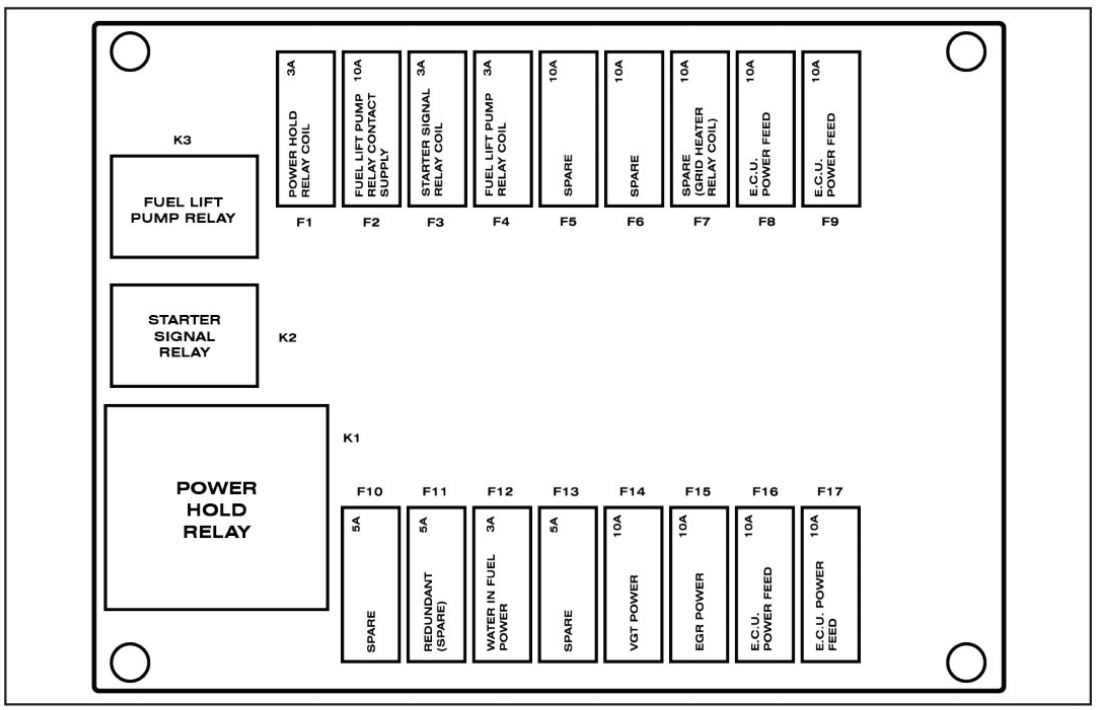



**Figure 122** Engine fuse panel layout.

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# Checking Front Axle Differential Oil Level

**Before checking the front axle differential oil level, ensure:**

- The forklift is parked on level ground.
- The park brake is applied.
- The forward / reverse selector is in NEUTRAL and the ignition is off.

1. To check the front axle oil level, remove the level plug (**A** in Figure 123).
2. The oil level should be even with the bottom of the level hole. If necessary, add oil. Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of oil.

# Changing Front Axle Differential Oil Level

**Before changing the front axle differential oil level, ensure:**

- The forklift is parked on level ground, with the front tires raised and secured.
- The park brake is applied.
- The forward / reverse selector is in NEUTRAL and the ignition is off.

1. Locate a drain tray of sufficient size to catch oil as it drains from axle. Remove fill/level plug **A** and drain plug **B** (Figure 123).
2. Clean and refit drain plug **B**. Tighten to 50 N m (37 ft lbs) (Figure 123).
3. Fill axle with oil. Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of oil. Oil should be level with the bottom of the fill/level hole.
4. Clean and refit fill/level plug **A**. Tighten to 50 N m (37 ft lbs) (Figure 123).

# Checking Front & Rear Axle Hub Oil

**Before checking the front and rear axle hub oil, ensure:**

- The forklift is parked on level ground.
- The park brake is applied.
- The forward / reverse selector is in NEUTRAL and the ignition is off.

1. To check the rear axle oil level, ensure the oil level mark on the hub is horizontal.
2. Remove the level plug (**C** in Figure 124).
3. The oil level should be even with the bottom of the level hole. If necessary, add oil. Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of oil.
4. Clean and replace the level plug.

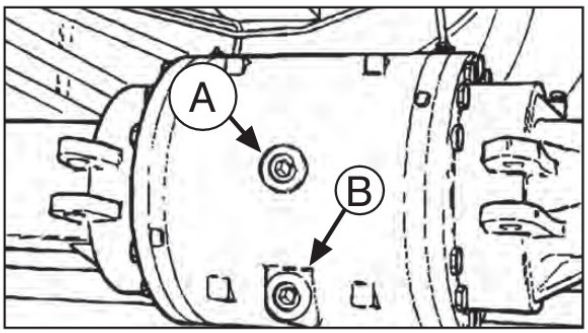



**Figure 123** Front Axle Differential Oil.



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# Changing Front & Rear Axle Hub Oil

**Before changing the front and rear axle hub oil, ensure:**

- The forklift is parked on level ground, with the rear tires raised.
- The park brake is applied.
- The forward / reverse selector is in NEUTRAL.
- The ignition is off.
- The forklift is properly secured.

1. Manually rotate both wheels to vertically align the oil level marks (**D** in Figure 125).
2. Place a large-capacity container under the drain plug.
3. Remove the level plugs from the hubs.
4. Drain the oil completely.
5. Set both hub oil level marks to the horizontal (Figure 124).
6. Fill the hubs with oil through the level holes. Oil should be even with the bottom of the level hole. Refer to the ***Fluid Types and Capacities*** chart on page 86 for correct type and quantity of oil.
7. Clean and reinstall the level plugs.

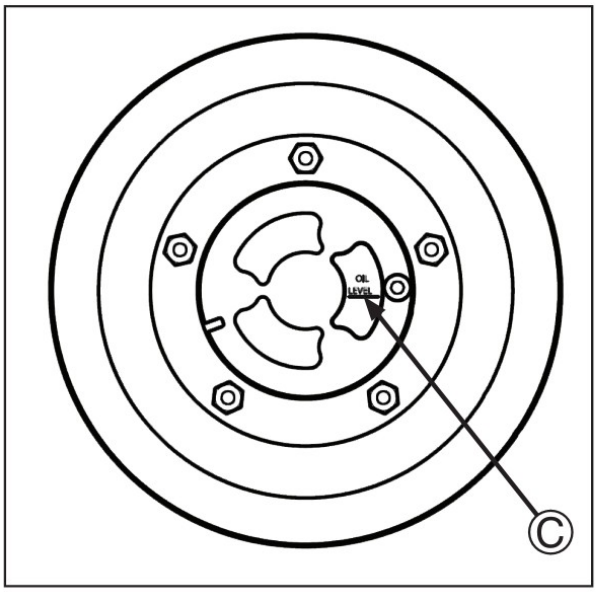



**Figure 124** Front & rear axle horizontal

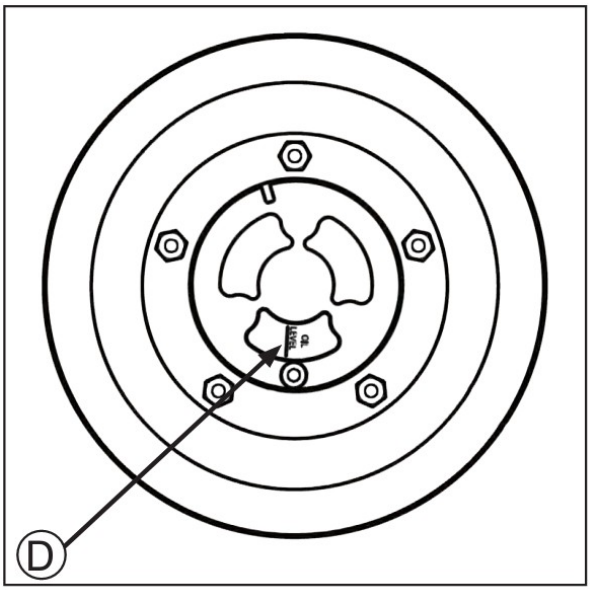



**Figure 125** Front & rear axle vertical.



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## Checking Rear Axle Differential Oil Level (4WD Only)

Before checking the rear axle oil level, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward / reverse selector is in NEUTRAL.
- The ignition is off.

1. To check the rear axle oil level, remove level plug (**A** in Figure 126) and its bonded washer.
2. The oil level should be even with the bottom of the level hole. If necessary, add oil. Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of oil.
3. Clean and reinstall the level plug, using a new bonded washer.

## Changing Rear Axle Differential Oil Level (4WD Only)

Before changing the rear axle oil level, ensure:

- The forklift is parked on level ground, with the front tires raised.
- The park brake is applied.
- The forward / reverse selector is in NEUTRAL.
- The ignition is off.
- The forklift is properly secured.

1. Place a large-capacity container under the drain plug (**B** in Figure 126).
2. Remove the drain plug (**B** in Figure 126) from the differential case.
3. Drain the oil completely. Clean and reinstall the drain plug (**B** in Figure 126) and tighten snugly. DO NOT overtighten.
4. Fill the axle with oil through the level hole (**A** in Figure 126). If the forklift has been set level, oil should just dribble out of both hub level points. Refer to the ***Fluid Types and Capacities*** chart on page 86 for the correct type and quantity of oil.
5. Clean and reinstall the level plug (**A** in Figure 126).

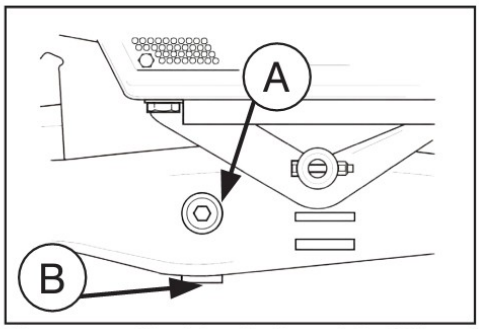



**Figure 126** Checking the Rear Axle Oil Level



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## Air Cleaner

Before cleaning the air cleaner, ensure:

- The forklift is parked on level ground.
- The park brake is applied.
- The forward/ reverse selector is in NEUTRAL.
- The ignition is off.

Replace the air cleaner element when air cleaner indicator light turns on.

1. Inspect hoses and fittings for splits and poor clamping which may allow unfiltered air to enter the engine.
2. The typical air installation is shown below with the outer clement (**A** in Figure 128) and the inner element (**B** in Figure 128).

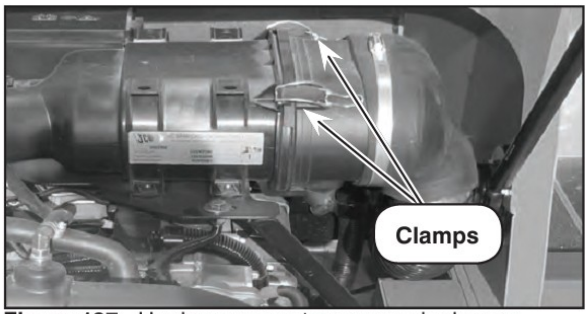



**Figure 127** Unclamp cover to access air cleaner elements.

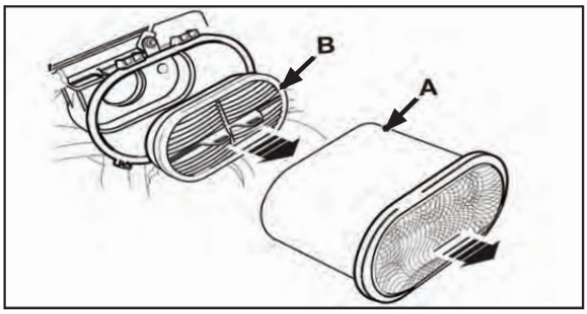



**Figure 128** Inner and outer air elements.

## Park Brake

- Check the operation of the park brake daily.
- Check the park brake adjustments every 300 hours.
- Refer to page 31 in the walk around inspection section for the proper park brake test procedure.
- If the forklift does not stop, or if the park brake malfunctions in any way during the check, shut down the forklift immediately.
- Do not operate the forklift until it has been serviced.

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## Park Brake Adjustment

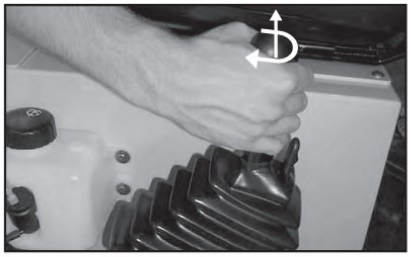


**Figure 129** Pull up and rotate the handle clockwise to tighten.

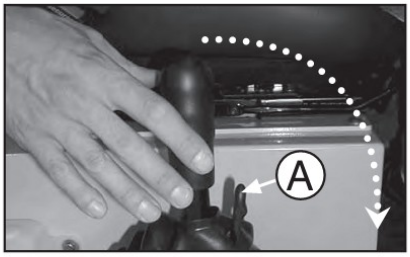



**Figure 130** Press in safety catch to disengage park brake.

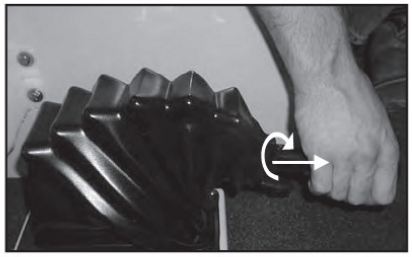


**Figure 131** Pull out end of handle and rotate one additional turn.

If operational checks (page 32) have identified a problem with the parking brake, follow these instructions to adjust it.

1. Park forklift on level ground, position forks on the ground and turn ignition off.
2. Pull up on handle to engage park brake.
3. Grasp END of handle, pull up and TURN clockwise until snug. DO NOT OVERTIGHTEN (see Figure 129).
4. Press in safety catch A and push handle forward to disengage brake (see Figure 130).
5. Pull OUT on END of handle and TURN handle ONE additional turn (see Figure 131)
6. Test adjustment by following ***Checking Park Brake Operation*** procedures on page 31.

## Check Pad Adjustment

- For the proper pad adjustment procedure, refer to Service Manual (part # 272259) for 2WD and Service Manual (part # 272825) for 4WD.

## Pad Renewal

- For the proper pad renewal procedure, refer to Service Manual (part # 272259) for 2WD and Service Manual (part # 272825) for 4WD.

**⚠ Warning**

**If the forklift does not stop during a park brake test, or if the park brake malfunctions in any way, shut down the forklift immediately. Do not operate the forklift until it has been serviced.**

**⚠ Warning**

**Never operate the forklift if the park brake does not function properly.**



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# Grease Points - 50 Hours

- For prolonged operational life, grease the following grease points every 50 hours using a lithium-based No. 2 consistency grease.

| Grease Point Locations | | |
|---|---|---|
| **Figure** | **Description** | **Quantity** |
| **E** in Figure 132 and 133 | Tilt Cylinder Ends | 4 |
| **F** in Figure 134 | Axle Pivot Bearings | 2 |
| **2WD Only** | | |
| **H** in Figure 135 | Driveshaft Universals | 2 |
| **I** in Figure 135 | Driveshaft Slip Yoke | 1 |
| **4WD Only** | | |
| **H** in Figure 135 | Driveshaft Universals | 4 |
| **I** in Figure 136 | Driveshaft Slip Yoke | 2 |
| **H** in Figure 135 | Driveshaft Universals (Use special tool #232907) | 4 |

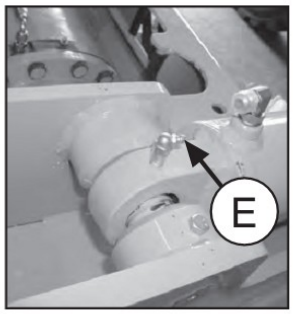



**Figure 132** Tilt Cylinder, Truck End (E).

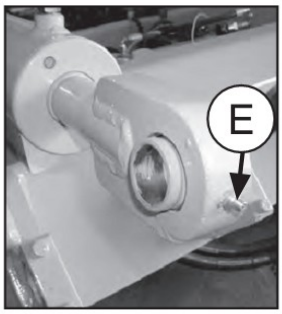



**Figure 133** Tilt Cylinder, Mast End (E).

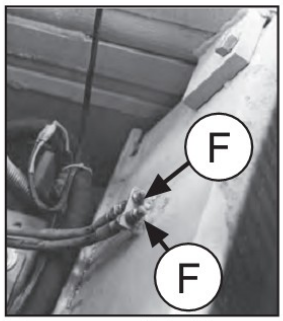



**Figure 134** Axle Pivot Bearings (F).

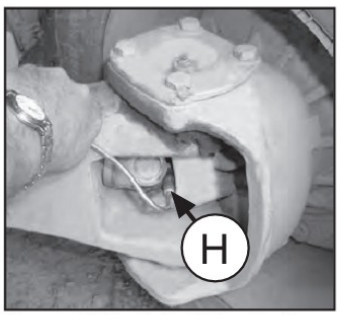



**Figure 135** Axle Driveshaft Universals, 4WD Only (G).

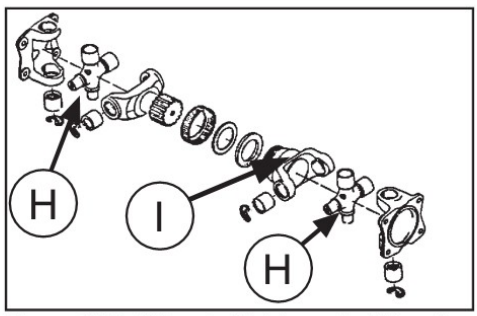



**Figure 136** Driveshaft Universals (H) and Slip Yoke (I).



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## Grease Points - 100 Hours

- For prolonged operational life, grease the following grease points every 100 hours using a lithium-based No. 2 consistency grease.

| Grease Point Locations | | |
|---|---|---|
| **Figure** | **Description** | **Quantity** |
| **A** in Figure 138 | Steer Cylinder Ends | 2 |
| **B** in Figure 138 | Tie Rod Ends | 2 |

## Grease Points - As Required

- For prolonged operational life, grease the following grease points as required using a lithium-based No. 2 consistency grease.

| Grease Point Locations | | |
|---|---|---|
| **Figure** | **Description** | **Quantity** |
| **C** in figure 139 | Cab Door Hinges | 3 |

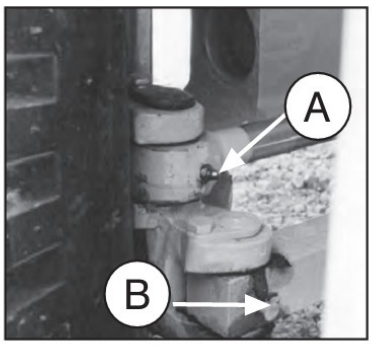



**Figure 138** Steer Cylinder Ends (A), and Tie Rod Ends (B).

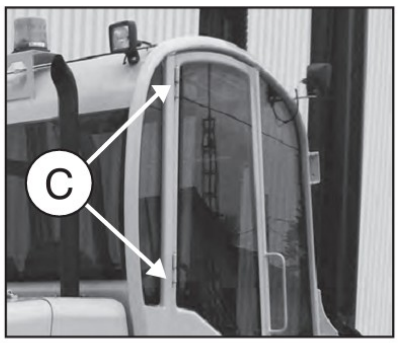



**Figure 139** Cab Door Hinges (C).

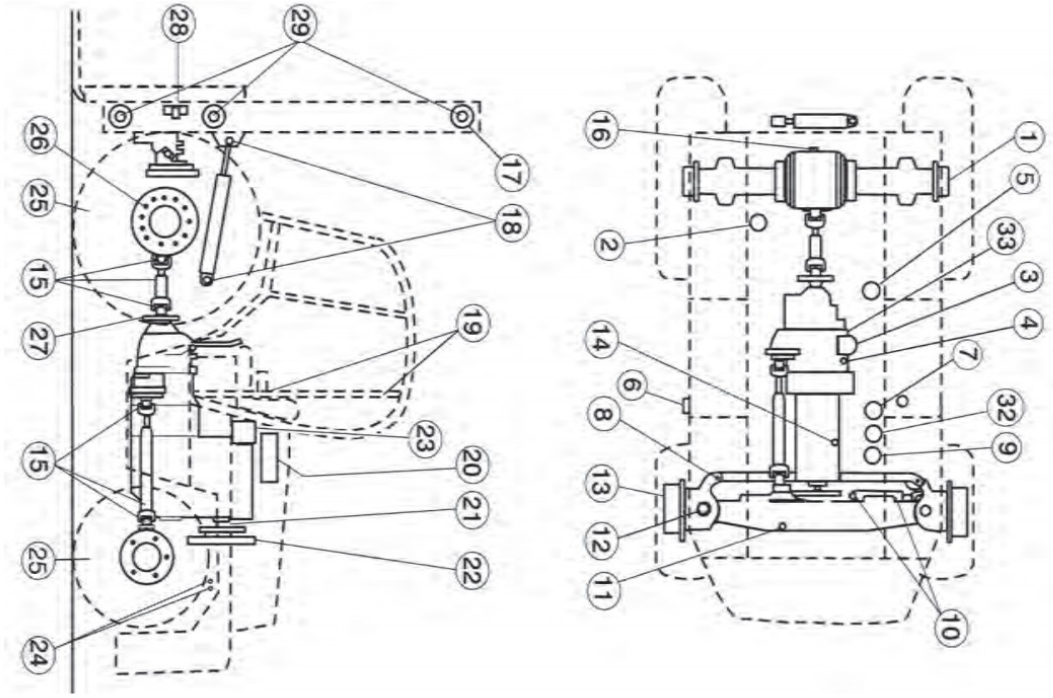
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# Periodic Maintenance Decal

## PERIODIC MAINTENANCE - S Series - ECOMAX T4

REFER TO OPERATOR'S MANUAL FOR DETAILED INFORMATION




| Internal Hours | Item No. | Item | Description |
|---|---|---|---|
| As Required | 19 | Door Hinges (if applicable) | Check and Lube |
| | 26 | Wheel Nut Torque | Check |
| | 25 | Tire Pressure | Check |
| | 4 | Transmission Oil | Check Level |
| | 6 | Hydraulic Oil | Check Level |
| 10 Hours or Daily | 14 | Engine Oil | Check Level |
| | 21 | Fan Belt | Check |
| | 22 | Engine Coolant | Check Level |
| | 8 | Tie Rod Ends | Check and Lube |
| | 10 | Steer Cylinder Ends & Universals | Check and Lube |
| | 12 | Trunnion Bearing - Top & Bottom | Check and Lube |
| | 29 | Load Rollers & Thrust Buttons | Check and Adjust |
| | 28 | Carriage Side Thrust Rollers | Check and Adjust |
| | 17 | Mast Chains | Check and Lube |
| | 18 | Tilt Cylinder Ends | Check and Lube |
| | 15 | Driveshaft Universals | Check and Lube |
| 50 Hours or Weekly | 16 | Front Axle Oil | Check Level |
| | 11 | Rear Axle Differential Oil (4WD Only) | Check Level |
| | 23 | Battery Electrolyte | Check Level |
| | 24 | Axle Pivot Bearings | Check and Lube |
| | 1 | Front Wheel Hub Oil | Check Level |
| | 13 | Rear Wheel Hub Oil | Check Level |
| | 5 | Sediment Bowl (Water Separator) | Check and Drain if Necessary |
| 300 Hours | 27 | Park Brake Pads | Check and Replace if Necessary |
| | 13 | Rear Wheel Axle Hub Oil | Change |
| | 11 | Rear Wheel Differential Oil (4WD Only) | Change |
| | 5 | Water Separator (Filter Element) | Replace |
| | 7 | Fuel Filter Element | Replace |
| 500 Hours or 6 Months | 9 | Engine Oil Filter | Change |
| | 14 | Engine Oil | Change |
| | 3 | Transmission Oil Filter | Replace |
| | 6 | Hydraulic Oil | Change |
| | 2 | Hydraulic Oil Filter | Replace |
| | 3 | Transmission Oil | Change |
| | 33 | Transmission Oil Strainer | Clean |
| 1000 Hours or Yearly | 20 | Air Cleaner - Outer Element | Replace |
| | 16 | Front Axle Oil | Change |
| | 1 | Front Wheel Hub Oil | Change |
| 1500 Hours | 32 | Crankcase Ventilation Filter | Replace |
| 2000 Hours or 2 Years | 22 | Anti-freeze | Change |
| | 20 | Air Cleaner - Inner Element | Replace |

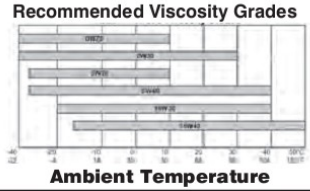
***For specific information on increased intervals affected by adverse or dusty working conditions, please see the respective service manuals.***

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# Fluid Types and Capcities

| ITEM | | CAPACITY | FLUID TYPE | INT. SPECIFICATION |
|---|---|---|---|---|
| ***Ecomax T4 Diesel Engine. Refer to the User's Handbook (#272938) for maintenance information.*** | | ***Engine Oil*** 15 L (15.85 US qt) | API-CJ4 | **Recommended Viscosity Grades**  **Ambient Temperature** |
| | | ***Total Coolant*** 20 L (21.13 US qt) 50/50 Water-Antifreeze mix | ASTM D 6210 | |
| ***Transmission (PS750 Series)*** | 2WD | ***Approx. total system:*** 19 L (20 US qt) ***Approx. transmission*** 14.8 L (15.6 US qt) | SAE 10W | T04, EL4117, EL4118 |
| | 4WD | ***Approx. total system*** 21 L (22 US qt) ***Approx. transmission*** 14.8L (15.6 US qt) | | |
| ***Transmission (SS600 Series)*** | 2WD | ***Approx. total system:*** 19 L (20 US qt) ***Approx. transmission*** 13 L (13.7 US qt) | | |
| | 4WD | ***Approx. total system*** 21 L (22 US qt) ***Approx. transmission*** 14 L (14.8 US qt) | | |
| ***Drive Axles (PD70, PD87)*** | Complete Axle | 25 L (26.2 US qt) | Mobilfluid 424 | M2C134D |
| ***4WD Steer Axle (SD55)*** | Differential | 13.5 L (14.2 US qt) | Mobifluid 424 | API-GL-4 |
| | Hub | 1.9 L (2.0 US qt) | Mobil HD90 | API-GL-5 |
| ***2WD Steer Axle (S55)*** | Hub | 1.9 L (2.0 US qt) | Mobil HD90 | API-GL-5 |
| ***Hydraulic System*** | Tank | 79 L (21 US gal) | Hydraulic Oil | ISO VG 32 |
| ***Fuel System**** | Tank | 98 L (26 US gal) |   | |

***USE THE CORRECT FUEL.** The use of incorrect or contaminated fuel can cause severe engine damage. Please refer to the Ecomax T4 Diesel Engine User's Handbook (#272938) for acceptable and suitable fuel grades.

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# U.S. EPA Engine Emission Compliance Decal

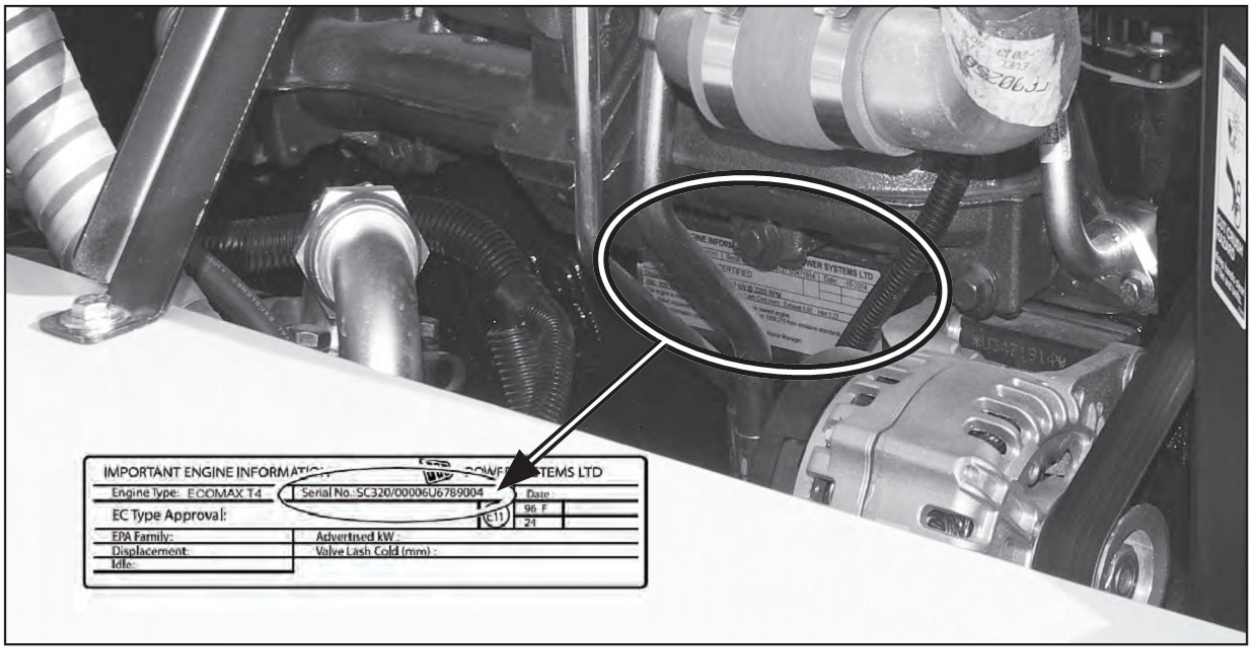



**Figure 140** All engines in Sellick Equipment Limited forklifts comply with current U.S. EPA standards. The manufacturer's decal is located below the exhaust manifold.

- All Sellick Equipment Limited forklifts comply with current U.S. EPA standards for large, non-road, compression-ignition engines.
- The manufacturer's decal is located below the exhaust manifold (Figure 140).



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*Sellick Equipment Limited warrants new products sold by it under the trademark "Sellick" to be free from defects in material and workmanship during the first twelve (12) months or two thousand (2000) operating hours (whichever occurs first) after date of delivery of the product to the initial user. (Rentals are considered as retail sales).*

*This warranty shall be fulfilled by any authorized Sellick dealer to provide, at his place of business and during normal working hours, a new or repaired part (whichever Sellick elects) along with established labour for the installation of such parts found upon its inspection to be defective in material or workmanship.*

*Replacement parts provided under the terms of this warranty are warranted until the expiry date of the warranty of the product in which they are installed.*

*Note: Dieselmax/Ecomax engine warranty has unlimited hour coverage over the 12 month warranty period.*

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2. *Vendor warranted items such as tires and tubes.*
3. *Normal maintenance services (such as engine tune up, fuel system cleaning, lubrication, brake and other adjustments, chain and roller adjustment).*
4. *Normal replacement of regular maintenance items (such as filters, oils, spark plugs, ignition points and brakes).*
5. *Deterioration of belts and exterior finish due to normal use and exposure.*
6. *Any part of the machine that has been subject to negligence, alterations, accident, or in connection with parts or attachments made or supplied by someone other than Sellick, if in Sellick's opinion such use affects its performance, stability or reliability.*
7. *Incidental charges such as towing and trucking.*
8. *Incidental charges such as oil, fuel or anti-freeze.*
9. *Travel, shipping expense, service calls, meals and overtime.*
10. *Transportation and trucking charges on replacement material or loaner equipment.*
11. *Replacement and rental units.*
12. *Loss of revenue.*
13. *The addition of foamed plastic "fill" to tires by the customer changes the characteristics of our product and voids warranty on wheels and axle components unless customer has written consent by Sellick to make this modification.*

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