TECHNICAL MANUAL

OPERATION AND OPERATOR MAINTENANCE INSTRUCTIONS

ILLUSTRATED PARTS BOOK

MAINTENANCE / OVERHAUL INSTRUCTION

TRUCK, FORKLIFT, 50K ROUGH TERRAIN CONTAINER HANDLER

LIFTKING INCORPORATED

MODEL: LK50C

PURCHASE ORDER NO: 16591-X

SERIAL NO.
LK87737 AND LK87738

NSN 3930-01-339-2171

20 AUGUST 1994

INTRODUCTION

PURPOSE

These operation and operator Maintenance Instructions offer guides to the effective and safe usage of the adverse terrain Container Handler truck. The manual was prepared to assist the driver / operator in recognizing proper operation and maintenance procedures. The articulating frame four wheel drive truck is manufactured by Liftking Incorporated, Woodbridge, Canada L4L 1V9 as their model LK 50C.

SCOPE

The instructions contained in this manual provide the information required to operate the truck and properly handle the loads using both the container handler attachment and the fork kit attachment.

The information on Maintenance of the truck is limited in this manual to functions related to Daily and Weekly inspections. Similarly, the operators will perform Daily and Weekly lubrications only.

ARRANGEMENT

The manual is arranged as follows:

Chapter I, Description - This chapter presents information on salient characteristics of the truck and the particulars of all main components.

Chapter II, Operation - This chapter comprises the applicable Safety Rules information on all operating controls and instruments as well as use of truck in material handling operation. Preparation for service and interchanging of container handlers, also form a part of this chapter.

Chapter III, Operator Inspection, Maintenance and Lubrication. This chapter provides inspection and " trouble shooting " charts as well as servicing instructions as related to the truck operator.

The information in the Lubrication Chart specifies the lubricants, depicts the lubrication points on the truck and attachments and identifies the corresponding servicing periods.

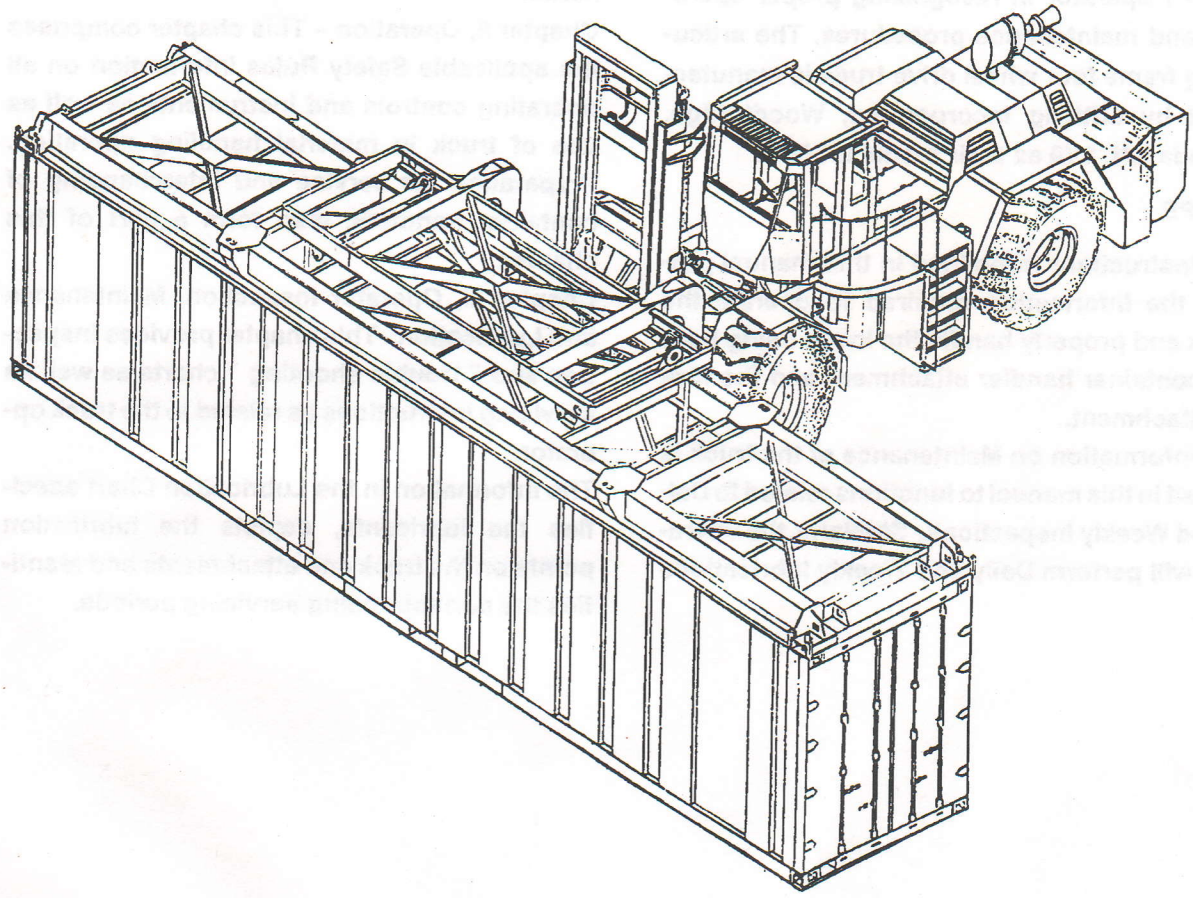

FIGURE 1-1 LK50C FORKLIFT AND CONTAINER HANDLER TRUCK

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CHAPTER I
DESCRIPTION

1-1 PURPOSE

The container handler truck is a means of conveyance of containerized loads. It will be used to remove and lower or pickup the container from its stored position. Travel with that load, elevate, and deposit (stack) it in the designated location.

Lifting or transporting personnel is not permitted.

1-2 CONFIGURATION

The Container Handler truck is made up of; an Articlulated frame, cab, and mast assembly. The mast assembly is composed of a carriage, container handler attachment and either a 20Ft. or 40Ft. container handler. A fork kit is also supplied and may be installed on the carriage once the container handler attachment is removed. The torque convertor mounted hydraulic pump provides power for the steering, mast, carriage and container handler assemblies. Load lifting, mast tilting, load sideshifting and fork positioning are all accomplished by hydraulics. All controls are mounted inside the cab and are clearly identified.

TABLE 1-1
CONTAINER HANDLER TRUCK PARTICULARS

Type of Vehicle	Rough Terrain Container Handler Truck
Crew	Driver
Climate Range	-25 to 125 Deg.F.
Lifting Capacity	50,000 Lbs.
Lifting Height with 40 Ft. Container Handler	113.5" maximum
Lifting Height with 20 Ft. Container Handler	113.5" maximum
Lifting Height with Fork Kit Attachment (Low Profile Mast)	110" maximum
Lifting Speed with rated Load	31 ft. per minute minimum
Lowering Speed Loaded	70 ft. per minute maximum
Lowering Speed Unloaded	35 ft. per minute minimum
Mast Tilt	Forward 5 Degrees
	Rearward 8 Degrees
Ground Clearance	12 inches
Longitudinal Slope	25 percent
Lateral Slope	15 percent
Travel Speed Forward	18 MPH
Rearward	16 MPH
Truck Dimensions	
Length	With Forks and Pintle Hook 420 inches
Width	135 inches
Height	168 inches

TABLE 1-1 (CONTINUED)
CONTAINER HANDLER TRUCK PARTICULARS

Gross Vehicle Weight	
With 20 Ft. Container Handler Attachment	111,000 Lbs.
Front Axle	44,500 Lbs
Rear Axle	66,500 Lbs
With 40 Ft. Container Handler Attachment	117,000 Lbs.
Front Axle	54,500 Lbs
Rear Axle	62,500 Lbs
With Fork Kit	100,500 Lbs.
Front Axle	29,500 Lbs
Rear Axle	71,000 Lbs
Forks	
Length	95.5 inches
Width	11.75 inches
Thickness	4.5 inches
Maximum Spacing Outside to Outside	Forks Together 66 inches
	Forks Spread 90 inches
Engine	
Manufacturer	Cummins
Type	Turbo Charged Diesel
Model	LTA10 C325
Horse Power	325 HP at 2100 RPM
Transmission	
Manufacturer	Clark
Type	Powershift
Model	6422-10
Speeds Forward	Four
Reverse	Four
Front Axle	
Manufacturer	Clark
Model	19D2748
NoSpin Differential	Yes
Rear Axle	
Manufacturer	Clark
Model	19D2748
NoSpin Differential	No

TABLE 1-1 (CONTINUED)
CONTAINER HANDLER TRUCK PARTICULARS

Tires

Tread		Non-Directional
Manufacturer		Goodyear
Size		29.5 R 29
Pressure	Front	110 PSI
	Rear	110 PSI

Fuel System

Number of Tanks	Two
Capacity	80 Gallons
Fuel	Diesel Fuel #2

Hydraulic System

Hydraulic Pump

Manufacturer	Commercial Intertech
Part Number	322- 9529-082
Reservoir Capacity	75 Gallons

Lift Cylinder

Manufacturer	LiftKing Incorporated
Part Number	18370C

Tilt Cylinder

Manufacturer	LiftKing Incorporated
Part Number	18570D

Carriage Oscillating Cylinder

Manufacturer	Liftking Incorporated
Part Number	19896

Fork Positioning Cylinder

Manufacturer	Monarch Ltd.
Part Number	25TR12

Sideshift Cylinder

Manufacturer	Liftking Incorporated
Part Number	19104C

Reach/Slew Cylinder

Manufacturer	Monarch Ltd.
Part Number	35TR08

TABLE 1-1 (CONTINUED)
CONTAINER HANDLER TRUCK PARTICULARS

Twist Lock Cylinder	
Manufacture	Liftking Incorporated
Part Number	19389A
Steering Cylinder	
Manufacturer	Liftking Incorporated
Part Number	19002C
Steering System	
Operating Fluid	MIL-L-2104C, Grade 10
Steering Control Unit	
Manufacturer	Danfoss
Part Number	150-1080
Brake System	
Type	Air Assisted Hydraulic Brake
Master Cylinder	
Manufacturer	Mico Brake
Part Number	A838
Electrical System	
Type	24 VDC Negative Ground
Circuit Protection	Circuit Breakers
Alternator	
Manufacturer	Delco Remy GM
Model	30-SI Series
Voltage	24 Volts, 60 Amps
Battery	
Number of Batteries	2
Manufacturer	East Pen
Model	4D
Voltage	12 Volt
Ampere Rating	850 Amps
Starter	
Manufacturer	Delco Remy GM
Model	42-MT
Voltage	24 Volts

CHAPTER II
OPERATION

2-1 SAFETY.

A careful operator protects both himself and others from hazards, eliminates risk of damage to the truck and its load, thus rendering his job safe and efficient.

2-1.1 Do not operate this lift truck unless you have been trained and authorized to do so. Read all warnings and instructions in this manual before using the truck.

2-1.2 Do not operate this truck until you have checked its condition. Carry out the daily circle check at the beginning of each shift. Report any defects immediately and do not use faulty truck until repaired.

2-1.3 Do not operate lift truck unless you are in correct operating position. Never place any part of your body into the mast, between the mast and the truck or outside the truck.

2-1.4 Do not lift loads that exceed the truck's maximum rated capacity. Check capacity plate for load weight and load center information.

2-1.5 Do not handle unstable or loosely stacked loads. Use special care when handling long, high or wide loads.

2-1.6 Before lifting, spread forks as far as load will permit. Be sure load is centered and forks are completely under load.

2-1.7 Lift loads with mast in vertical position. Watch out for overhead obstructions including overhead power lines.

2-1.8 Use sideshift or move lift truck with extreme caution when load is elevated.

2-1.9 When lowering loads into required position, do not attempt to withdraw the forks until they are in a no load position.

2-1.10 Operate tilting mechanism slowly and smoothly. Do not tilt forward when lifting mechanism is being elevated except to pick up or deposit a load. When stacking , use only enough backward tilt to stabilize load.

2-1.11 Do not allow anyone to stand or pass under elevated forks, loaded or unloaded.

SAFETY FIRST

2-1.12 Always travel with forks lowered, loaded or unloaded. Maintain an adequate ground clearance and tilt mast back. Face direction of travel and keep a clear view of the road ahead. When load obstructs visibility, travel with forks trailing, but note that the load must always lead when driving uphill. Secure a guide whenever a complete view of the road ahead is obstructed.

2-1.13 Travel at a speed consistent with road and load conditions. Use special care when operating on ramps or slopes to maintain proper stability. Avoid angling and short turns in these areas.

2-1.14 Observe traffic regulations. Yield right-of-way to pedestrians. Slow down and sound horn at cross aisles and whenever vision is obscured.

2-1.15 Never park your truck, or leave a load in the way of fire fighting equipment, exits or anywhere it would be an obstruction or safety hazard.

2-1.16 Never park your truck on an incline. If it is necessary for the truck to be parked on an incline, park it at right angles to the slope, or securely chock the wheels.

2-1.17 Before getting off truck, neutralize travel control, lower the forks to the ground, tilt the mast forward and set parking brake.

2-1.18 Do not carry passengers. Do not lift any personnel on elevating forks unless lift truck has been equipped and authorized for use as a working platform.

2-1.19 Do not transport any personnel in working platforms.

2-1.20 Never drive up to anyone who is standing in front of a fixed object.

2-1.21 Never neglect an injury, however trivial it may seem. Report immediately for medical treatment.

SAFETY FIRST

2-1.22 Shut off engine before refueling, lubricating, servicing or making mechanical adjustments.

2-1.23 Always remove the hydraulic filler cap slowly to release any pressure inside the reservoir, because pressure could force the oil out of the reservoir very rapidly, causing severe burns.

2-1.24 When checking engine coolant, always remove the radiator cap very slowly, and with care when engine is hot. Never add cold water directly into the hot cooling system.

2-1.25 If necessary to start or run engine in an enclosed area, be sure to provide adequate ventilation.

2-1.26 Keep steps and cab floor clean and free from grease, ice and mud, to prevent accidents by slipping.

2-1.27 Never add counterweights without contacting Liftking Incorporated, or make any structural alterations which may alter truck capacity or stability.

2-2 OPERATING CONTROLS.

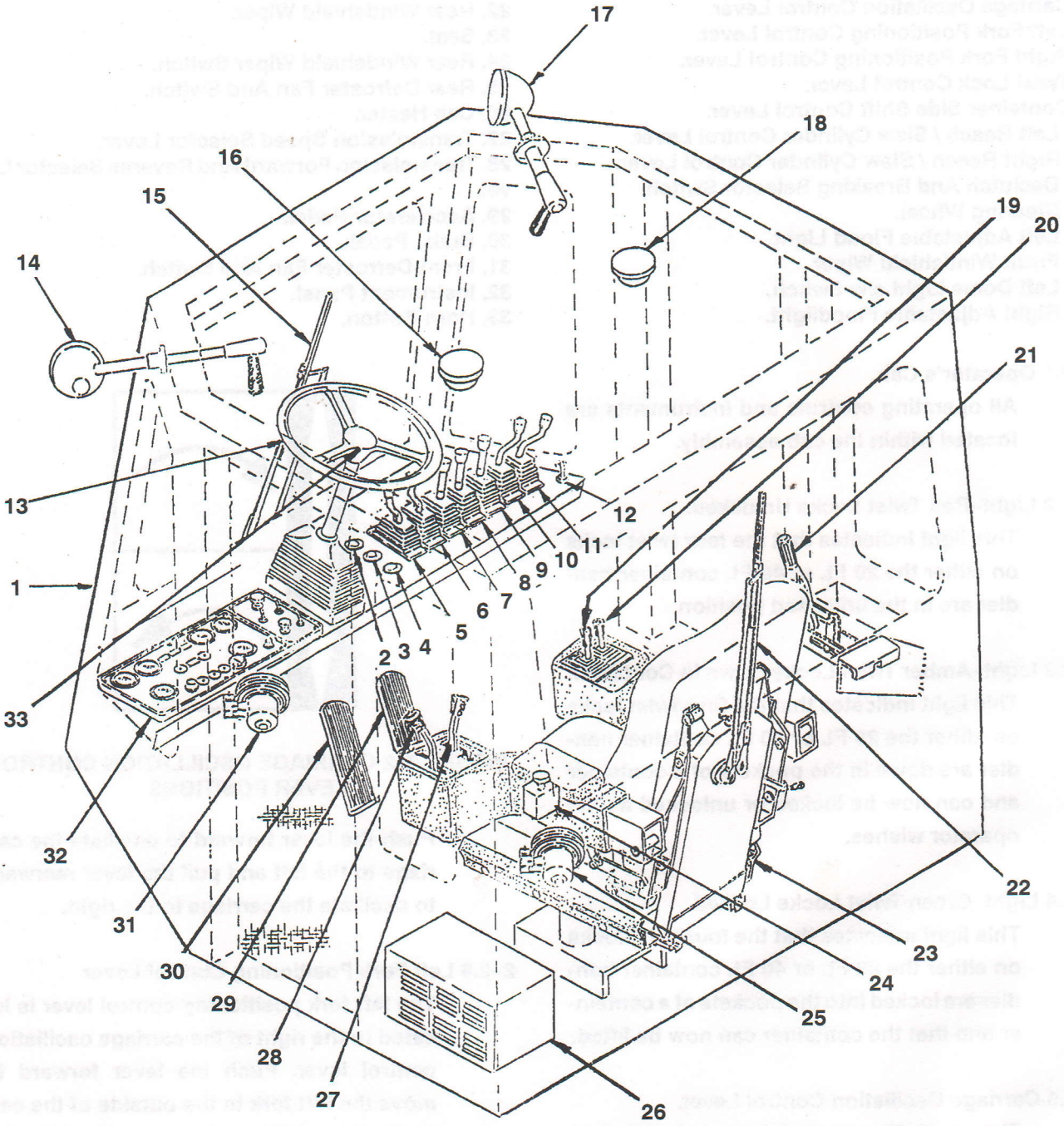


FIGURE 2-1 OPERATOR'S CAB

LEGEND FOR FIGURE 2-1 OPERATOR'S CAB

1. Operator's Cab.
2. Light-Red. Twist Locks Unlocked.
3. Light-amber, Twist Locks Down In Container.
4. Light-green, Twist Locks Locked.
5. Carriage Oscillation Control Lever.
6. Left Fork Positioning Control Lever.
7. Right Fork Positioning Control Lever.
8. Twist Lock Control Lever.
9. Container Side Shift Control Lever.
10. Left Reach / Slew Cylinder Control Lever.
11. Right Reach / Slew Cylinder Control Lever.
12. Declutch And Breaking Selector Switch.
13. Steering Wheel.
14. Left Adjustable Flood Light.
15. Front Windshield Wiper.
16. Left Dome Light c/w Switch.
17. Right Adjustable Floodlight.
18. Right Dome Light c/w Switch.
19. Lift Cylinder Control Lever.
20. Tilt Cylinder Control Lever.
21. Hand Brake Control Lever.
22. Rear Windshield Wiper.
23. Seat.
24. Rear Windshield Wiper Switch.
25. Rear Defroster Fan And Switch.
26. Cab Heater.
27. Transmission Speed Selector Lever.
28. Transmission Forward And Reverse Selector Lever.
29. Accelerator Pedal.
30. Brake Pedal.
31. Front Defroster Fan And Switch.
32. Instrument Panel.
33. Horn Button.

2-2.1 Operator's Cab.

All operating controls and instruments are located within the cab assembly.

2-2.2 Light-Red Twist Locks Unlocked.

This light indicates that the four twist locks on either the 20 Ft. or 40 Ft. container handler are in the unlocked position.

2-2.3 Light-Amber Twist Locks Down in Container.

This light indicates that the four twist locks on either the 20 Ft. or 40 Ft. container handler are down in the pockets of a container and can now be locked or unlocked as the operator wishes.

2-2.4 Light-Green Twist Locks Locked.

This light indicates that the four twist locks on either the 20 Ft. or 40 Ft. container handler are locked into the pockets of a container and that the container can now be lifted.

2-2.5 Carriage Oscillation Control Lever.

The oscillation control lever is located on the console to the right of the steering wheel.

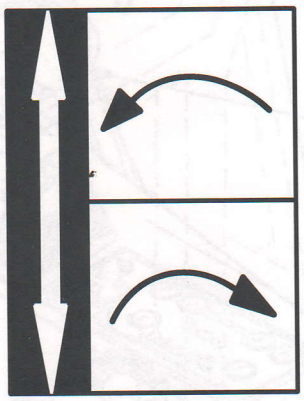


FIGURE 2-2 CARRIAGE OSCILLATION CONTROL LEVER POSITIONS

Push the lever forward to oscillate the carriage to the left and pull the lever rearward to oscillate the carriage to the right.

2-2.6 Left Fork Positioning Control Lever

The left fork positioning control lever is located to the right of the carriage oscillation control lever. Push the lever forward to move the left fork to the outside of the carriage and pull the lever rearward to move the left fork toward the center of the carriage.

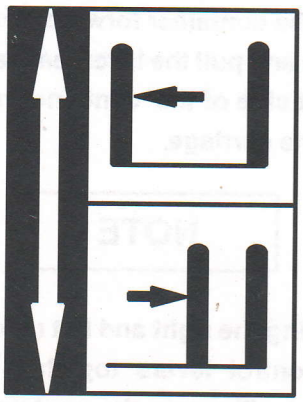


FIGURE 2-3 LEFT FORK POSITIONING CONTROL LEVER POSITIONS

2-2.7 Right Fork Positioning Control Lever

The Right fork positioning control lever is located to the right of the left fork positioning control lever. Push the lever forward to move the right fork to the outside of the carriage and pull the lever rearward to move the right fork toward the center of the carriage.

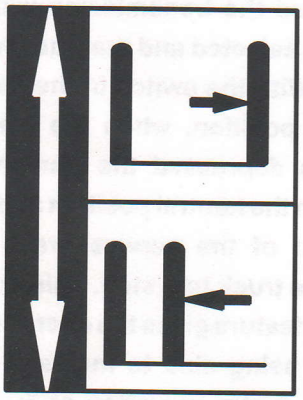


FIGURE 2-4 RIGHT FORK POSITIONING CONTROL LEVER POSITIONS

2-2.8 Twist Lock Control Lever.

The twist lock control lever is located to the right of the right fork positioning control lever.

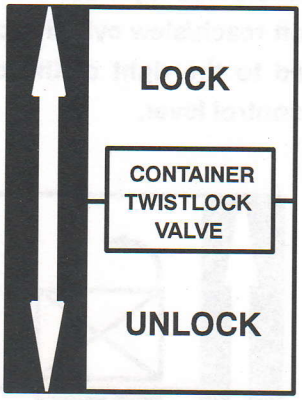


FIGURE 2-5 TWIST LOCK CONTROL LEVER POSITIONS

Push the lever forward to lock the four container handler twist locks, and pull the lever rearward to unlock the four container handler twist locks.

2-2.9 Container Side Shift Control Lever.

The container side shift control lever is located to the right of the twist lock control lever.

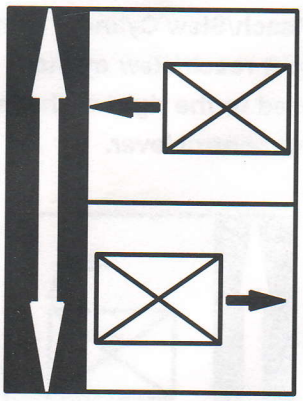


FIGURE 2-6 CONTAINER SIDE SHIFT CONTROL LEVER POSITIONS

Push the lever forward to side shift the container to the left, and pull the lever rearward to side shift the container to the right.

2-2.10 Left Reach/Slew Cylinder Control Lever.

The left reach/slew cylinder control lever is located to the right of the container side shift control lever.

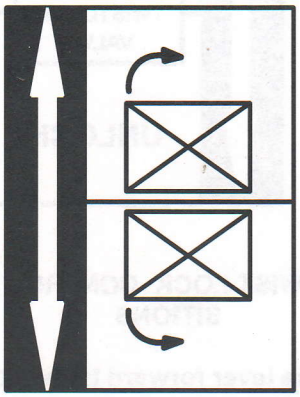


FIGURE 2-7 LEFT REACH/SLEW CYLINDER CONTROL LEVER POSITIONS

Push the lever forward to move the left side of the container forward away from the carriage and pull the lever rearward to move the left side of the container rearward towards the carriage.

2-2.11 Right Reach/Slew Cylinder Control Lever.

The right reach/slew cylinder control lever is located to the right of the left reach/slew cylinder control lever.

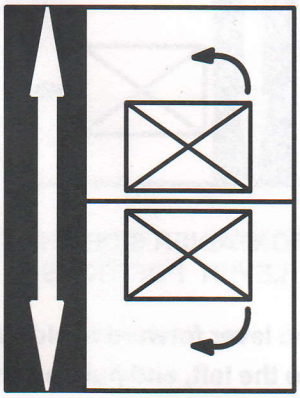


FIGURE 2-8 RIGHT REACH/SLEW CYLINDER CONTROL LEVER POSITIONS

Push the lever forward to move the right side of the container forward away from the carriage and pull the lever rearward to move the right side of the container rearward towards the carriage.

NOTE

By moving the right and left reach/slew cylinder control levers together forward or rearward will cause the container to move forward or rearward thus giving the container handler a reach capability to approximately 18 inches. Moving the left and right reach/slew cylinder control levers individually will cause the container to be moved to an angled position from the carriage thus giving the container handler a slew capability.

2-2.12 Declutch and Braking Selector Switch.

This switch provides for the selection between braking only and declutch and braking. With the switch in the braking only position, when the service brake pedal is depressed the transmission will remain in the gear selected and the truck will come to a stop. With the switch in the declutch and braking position, when the service brake pedal is depressed the transmission will shift into the neutral position and further depression of the service brake pedal will bring the truck to a stop. This declutch and braking feature gives the operator an advantage of being able to increase the engine rpm. for faster operation of the hydraulics without having to shift the transmission to neutral. Upon release of the service brake pedal the transmission will shift back into the gear selected. Do not use the declutch and braking feature under high torque requirements.

2-2.13 Steering Wheel.

The steering wheel is operated in the conventional manner. When the wheel is turned clockwise, the truck will turn to the right. When the wheel is turned counterclockwise, the truck will turn to the left.

2-2.14 Left Adjustable Floodlight.

This light may be adjusted by the operator from his seated position to focus light on the container handler twist lock during container handling operations at night, or for focusing light where required during forklift operations at night.

2-2.15 Front Windshield Wipers.

The front windshield wiper is controlled by a switch on the instrument panel.

2-2.16 Left Dome Light and Switch.

The left dome light is controlled by a switch mounted on the light.

2-2.17 Right Adjustable Floodlight

This light may be adjusted by the operator from his seated position to focus light on the container handler twist lock during container handling operations at night, or for focusing light where required during forklift operations at night.

2-2.18 Right Dome Light and Switch.

The right dome light is controlled by a switch mounted on the light.

2-2.19 Lift Cylinder Control Lever.

The lift cylinder control lever is located on the right arm of the driver's seat Pull the lever rearward to raise the carriage and push the lever forward to lower the carriage.

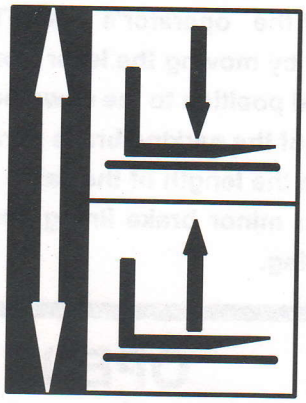


FIGURE 2-9 LIFT CONTROL LEVER POSITIONS

2-2.20 Tilt Cylinder Control Lever.

The tilt cylinder control lever is located on the right arm of the driver's seat to the right of the lift cylinder control lever. Push the lever forward to tilt the mast forward and pull the lever rearward to tilt the mast rearward.

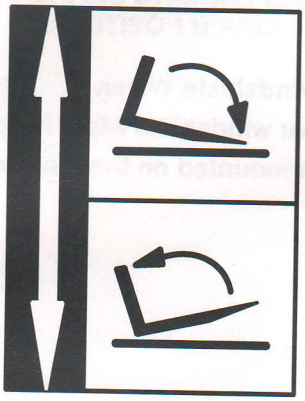


FIGURE 2-10 TILT CYLINDER CONTROL LEVER POSITIONS

2-2.21 Hand Brake Control Lever.

NOTE

Always apply the parking brake before leaving the operator's seat.

The parking brake lever is located to the right of the operator's seat. The brake is applied by moving the lever from the up or released position to the down position. The handle of the parking brake permits adjustment to the length of the cable to compensate for minor brake lining wear or cable stretching.

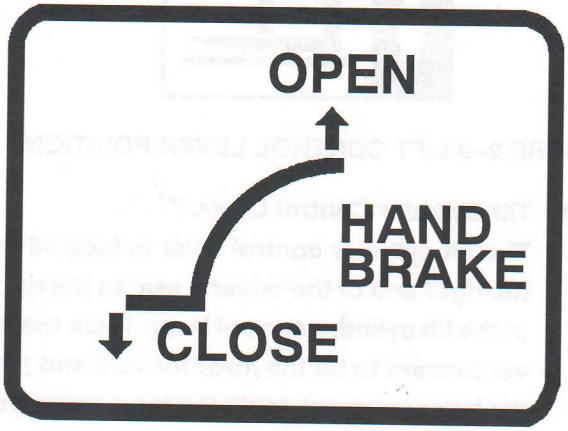


FIGURE 2-11 PARKING BRAKE CONTROL LEVER POSITIONS

2-2.22.Rear Windshield Wiper.

The rear windshield wiper is controlled by a switch mounted on the rear cab panel.

2-2.23 Seat

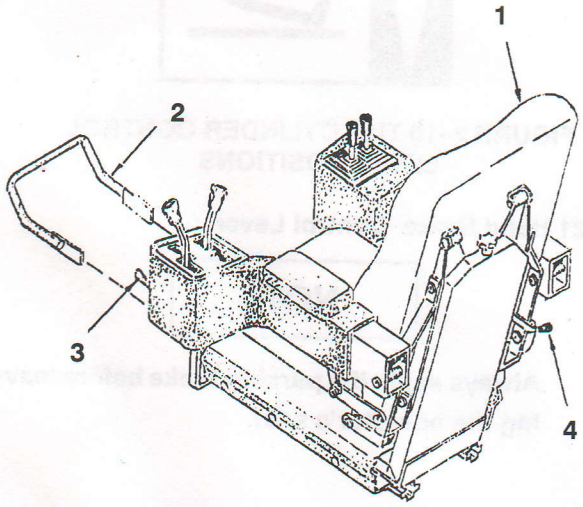


FIGURE 2-12 SEAT ADJUSTMENT CONTROLS

The operator's seat is adjustable forward and backward for maximum comfort. The adjusting lever is located on the front of the seat (2). Pull the lever up to release the seat lock. Then, by shifting body weight, move the seat forward or backward to desired position. The seat back may also be adjusted by moving adjustment lever (4) and positioning the seat back angle to the desired position. For ease of entry to the seat the left seat arm may be raised by moving lever (3) to unlock the seat arm. To lock the arm back down in position simply push the arm down into the normal position until it locks.

2-2.24 Rear Windshield Wiper Switch.

The rear windshield wiper switch is located on the back cab panel and controls the rear windshield wiper.

2-2.25 Rear Defroster Fan and Switch.

The rear defroster fan is mounted on the rear cab panel and can be adjusted to the desired position for maximum clearing of the rear windshield. The control switch is mounted on the bottom of the rear defroster fan.

2-2.26 Cab Heater.

The cab heater is floor mounted to the left of the driver's seat and is controlled by a heater switch on the instrument panel.

2-2.27 Transmission Speed Selector Lever.

The transmission speed selector lever located on the left arm of the driver's seat allows the operator to select from 1, 2, 3, or 4 transmission speed ranges with 1 being low range and 4 being the highest range. Shifting from 1 through 4 can be done at full throttle and load. Downshifting from 4 to 3, 3 to 2, and from 2 to 1 can be done under full power and / or full load within the working

range only.

2-2.28 Transmission Forward and Reverse Selector Lever.

The transmission forward and reverse selector lever located to the left of the speed selector lever on the left arm of the driver's seat allows the operator to select forward or reverse direction as indicated by the letters "F" and "R". This lever must be shifted to neutral "N" in order to start the engine.

2-2.29 Accelerator Control Pedal.

The accelerator pedal, located on the floor on the right hand side is connected by linkage to the fuel injection pump. The engine will run at idle speed with the pedal released. Depressing the pedal increases engine speed. Overspeeding of the engine with the pedal fully depressed is prevented by a governor in the fuel injection pump.

2-2.30 Brake Pedal.

The brake pedal is located on the floor to the left of the accelerator pedal. The brake pedal operates the treadle valve which controls the flow of compressed air to the brake boosters on the master cylinders. The diaphragm in the brake boosters activate the master cylinders which in turn activates the wheel cylinders and brake shoes. Depress brake pedal gradually to slow or bring vehicle to a stop. Avoid sudden stops.

2-2.31 Front Defroster Fan and Switch.

The front defroster fan is mounted on the left side of the dash and can be adjusted to the desired position for maximum clearing of the front windshield. The control switch is mounted on the bottom of the front defroster fan.

2-2.32 Instrument Panel.

Refer to Paragraph 2-3 for details.

2-2.33 Horn

The horn button is located in the center of the steering wheel and operates the truck horn. Discretion should be used when sounding the horn.

2-3 INSTRUMENT PANEL.

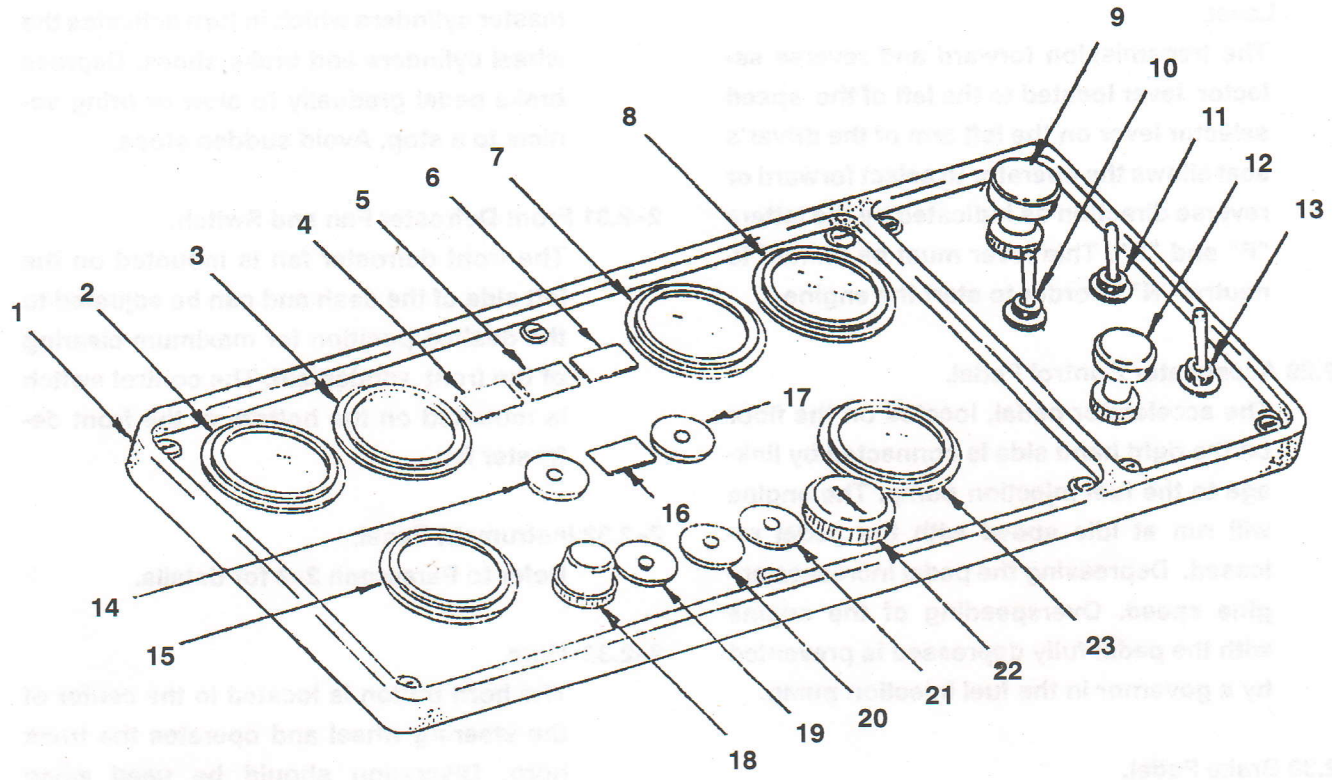


FIGURE 2-13 INSTRUMENT PANEL

1. Instrument Panel.
2. Ammeter Gauge.
3. Air Pressure Gauge.
4. Low Air Pressure Warning Light.
5. High Fuel Tank Level Light.
6. Low Engine Oil Pressure Warning Light.
7. Engine Oil Pressure Gauge.
8. Engine Coolant Temperature Gauge.
9. Front Windshield Wiper Switch.
10. Front Floodlight Switch.
11. Rear Floodlight Switch.
12. Cab Heater Switch.
13. Front Adjustable Floodlights.
14. Circuit Breaker Windshield Wipers.
15. Hourmeter.
16. Low Fuel Tank Level Light.
17. Circuit Breaker Fuel pump.
18. Ether Start Button.
19. Circuit Breaker Front Lights.
20. Circuit Breaker Rear Lights.
21. Circuit Breaker Ignition Circuit.
22. Starter Switch.
23. Transmission Oil Temperature Gauge.

2-3.1 Instrument Panel.

The Instrument Panel is mounted on the dash to the left of the steering wheel.

2-3.2 Ammeter Gauge.

This gauge indicates the charging rate of the alternator. When the batteries are fully charged the ammeter will indicate a charging rate close to zero except for a short period of time after using the starter. If the batteries are in a low state of charge the ammeter will indicate a substantial rate of charge.

2-3.3 Air Pressure Gauge.

This gauge indicates the amount of air pressure in the air tank available for service brake operation and operation of the air control valves which operate the hydraulic control valves.

2-3.4 Low Air Pressure Warning Light.

This red light will be on (illuminated) when there is insufficient air to safely operate the service brakes.

WARNING

Do not operate the truck until sufficient air pressure is available. Low Air Pressure Warning Light must be off and Air Pressure Gauge should be above 75 P.S.I.

2-3.5 High Fuel Tank Level Light.

This light indicates when the fuel level in the fuel tanks is above the 3/4 mark. Used in conjunction with the low fuel tank level light the operator can determine the approximate fuel remaining in the fuel tanks. Example: If the High Fuel Tank Level Light is off, and the Low Fuel Tank Level Light is off the level in the fuel tank is above the 1/4 full mark but below the 3/4 full mark.

2-3.6 Low Engine Oil Pressure Warning Light.

This light will come on when the engine is stopped and the ignition switch is on. If the Engine Oil Pressure drops below a safe operating pressure when the engine is running the light will also come on. Shut down the engine immediately and check the oil level if the light comes on while operating the engine.

2-3.7 Engine Oil Pressure Gauge.

This gauge indicates the pressure at which the lubricating oil is circulating through the engine when the engine is running. Normal operating pressure with engine warm and at idle speed is 10 to 20 PSI. Normal operating pressure with engine warm and at full RPM is 20 to 30 PSI.

2-3.8 Engine Coolant Temperature Gauge.

This gauge indicates the temperature of the engine coolant at the engine outlet to the radiator, when engine is running. Normal engine temperature operating range is 170 to 200 degrees (F) Fahrenheit.

2-3.9 Front Windshield Wiper Switch.

This switch operates the front windshield wiper only. The rear windshield wiper is controlled by an on-off switch on the rear panel of the cab.

2-3.10 Front Flood Light Switch.

This switch controls illumination of front flood lights mounted on the front fenders, the instrument panel and tailights.

2-3.11 Rear Flood Light Switch.

This switch controls illumination of rear flood lights mounted on the truck counterweight.

2-3.12 Cab Heater Switch.

This switch is a three (3) position switch used to control the cab heater located to the left rear of the driver's seat. Turn switch clockwise from off position to low and high, to operate.

2-3.13 Front Adjustable Floodlights

This switch controls illumination of the front adjustable floodlights mounted on the front of the cab.

2-3.14 Circuit Breaker Windshield Wipers.

This circuit breaker protects the electrical circuit for the windshield wiper motors. To reset, depress the white center button.

2-3.15 Hourmeter.

The hourmeter is activated whenever the ignition switch is turned to the on position. The hourmeter will indicate up to 9999.9 hrs before starting over at 0000.0.

2-3.16 Low Fuel Tank Level Light.

This light will come on when the fuel level of the fuel tanks drops below 1/4 full mark.

NOTE

Do not let the vehicle run out of fuel as this will normally require bleeding of the fuel system to restart the engine.

2-3.17 Circuit Breaker, Fuel Pump.

This circuit breaker protects the electrical circuit for the fuel pump solenoid. To reset, depress the white center button.

2-3.18 Ether Start Button.

This button switch when activated sends a measured shot of ether to the intake manifold of the engine, for cold weather starting. Refer to COLD WEATHER STARTING for proper operation of the switch.

2-3.19 Circuit Breaker, Front Lights.

This circuit breaker protects the electrical circuits for the front lights. To reset, depress the white center button.

2-3.20 Circuit Breaker, Rear Lights.

This circuit breaker protects the electrical circuits for the rear lights. To reset, depress the white center button.

2-3.21 Circuit Breaker, Ignition Circuit.

This circuit breaker protects the electrical circuits for the ignition and starter circuits. To reset, depress the white center button.

2-3.22 Starter Switch.

The starter switch is a 3 position key switch with a safety lockout feature, it prevents accidental engagement of the starter when the engine is running. To operate, turn the switch fully clockwise to engage the starter. When the switch is released, the switch is spring loaded and will return to the run position. The switch cannot be turned fully clockwise to engage the starter again without first turning the switch fully counterclockwise to the off-position.

2-3.23 Transmission Oil Temperature Gauge.

This gauge indicates the temperature of the transmission oil at the outlet of torque convertor to oil cooler. Normal operating range is 140 to 250 degrees F.

2-4 PREPARATION OF TRUCK FOR SERVICE.

2-4.1 Liftking Rough Terrain Trucks are shipped from the factory fully serviced and ready to operate, unless otherwise specified in the contract.

2-4.2 Before Starting the Vehicle Check The Following:

- **(a) Engine oil level**
- **(b) Engine coolant level**
- **(c) Hydraulic oil level**
- **(d) Brake fluid level**
- **(e) Fuel level**
- **(f) Battery and battery terminal connections**
- **(g) Air filter**

2-4.3 Start the Vehicle and Check the Following:

- **(a) Oil pressure**
- **(b) Air pressure**
- **(c) Transmission oil level**
- **(d) Fluid leaks**

2-5 STARTING PROCEDURES.

NOTE

Before starting the truck ensure procedures in 2-4 (Preparation of truck for service) have been carried out.

2-5.1 Starting the Engine.

(a) Transmission directional control lever is in neutral and parking brake is applied.

(b) Depress accelerator pedal slightly.

(c) Turn starter switch fully clockwise to engage starter.

CAUTION

This engine is equipped with a turbo charger with bearings lubricated by the engine oil system. AVOID high engine RPM operation on initial start-up of the engine until the engine oil pressure reaches its maximum pressure.

2-5.2 Engine Fails to Start.

If engine fails to start after 30 seconds of cranking, release the starter switch to disengage starter and allow the starter motor to cool for 2 minutes before cranking the engine again.

2-5.3 Cold Weather Starting.

The engine is equipped with an ether cold starting aid.

2-5.4 How To Operate ether cold starting aid:

(a) Turn starter switch to the cranking position and push ether start button once engine begins to crank.

(b) Release ether start button.

NOTE

Each time the ether start button is pushed with the engine cranking, a measured shot of ether is injected into the air intake manifold of the engine.

(c) If engine fails to start push ether start button again while cranking engine.

CAUTION

Once engine is operating do not use ether start button as damage to the engine head and pistons can be caused by excessive amounts of ether.

2-5.5 Engine Shutdown Procedure

(a) Place transmission directional control lever to the neutral position.

(b) Apply parking brake.

(c) Lower forks or carriage to ground and tilt mast forward.

(d) Allow engine to idle for at least 30 seconds before turning ignition switch off.

2-6 TRUCK OPERATION WITH FORK KIT ATTACHMENT INSTALLED WITH RATED LOAD AND EMPTY.

NOTE

Before operating the truck ensure daily circle check has been completed and you have familiarized yourself with the instruments and controls of the truck.

2-6.1 Selecting and Changing Directions

The directional control lever is located on the left side of the operator's seat.

CAUTION

Always look in the intended direction of travel.

(a) Forward

Raise the forks slightly by operating the lift cylinder control lever. With your foot on the brake, shift the transmission directional control lever to F (forward). Release the parking brake by pulling up on the parking brake lever. Release the brake pedal and accelerate the engine until the desired speed is obtained. To bring the truck to a complete stop, depress the brake pedal.

CAUTION

Always bring the truck to a complete stop before changing direction of travel.

(b) Reverse

Shift the transmission directional control lever to R (reverse). Release the brake pedal and accelerate the engine until the desired speed is obtained. To bring the truck to a complete stop, depress the brake pedal.

2-6.2 Stopping the Truck

To bring the truck to a safe stop, release the accelerator pedal and apply gradual pressure to the brake pedal until the truck has stopped. When parking the truck, engage the parking brake by pushing the parking brake lever to the full down position. Shift the transmission directional control lever to neutral (N) and lower the forks to the ground.

2-6.3 Carriage Lifting and Lowering

Lifting and lowering of the carriage is controlled by the lift cylinder control lever.(Lever closest to the operator on the right arm of the seat. Pull the lever back to lift the load. The rate of lift is controlled by the speed of the engine and the position of the lever. Slight acceleration of the engine and gradual movement of the lever from neutral to the lift position will produce a slow lifting action. Accelerating the engine and pulling the lever to full lift position will increase the lifting speed. When the forks are at the desired height smoothly release the lever to the neutral position.

CAUTION

Always travel with the forks at the lowest practicable level.

2-6.4 Mast Tilting

The tilt cylinder control lever is mounted to the right of the lift cylinder control lever. The rate of tilt is controlled by the speed of the engine and the position of the tilt lever. Slight acceleration of the engine and gradual movement of the tilt lever from neutral to either forward or rearward will produce a slow tilting action of the mast. Accelerating the engine and pulling or pushing the tilt le-

ver to the fullest extent will increase the tilting speed. When the mast is tilted to the desired position, smoothly release the tilt lever to the neutral position.

CAUTION

Use care when tilting the mast forward to prevent the load from sliding off the forks.

2-6.6 Fork Positioning

The left and right fork positioning control levers are mounted on the dash. The forks are adjusted hydraulically; by pushing a lever forward, the corresponding fork will move toward the outside of the carriage; by pulling the lever back, the fork will move toward the inside of the carriage. Position forks in proportion to the width of the load and symmetrically with respect to the center of the carriage.

2-6.7 Load Handling

(a) Lift truck stability is based upon the principle of the counterbalance and fulcrum. The front axle of the lift truck is the balancing point (fulcrum). The load is carried at the front of the truck and is counterbalanced by the counterweight on the rear of the truck.

WARNING

The load capacity of the lift truck should never be exceeded. Overloading of the lift truck can be a hazard to the operator's safety, or the safety of others, and material, or may damage the truck.

(b) Always look in the intended direction of travel. Always watch for low hanging pipes, electrical lines, and any other obstructions when raising forks or when travelling. For maximum truck stability, place the load against the vertical face of the forks. For safety, never have rider or personnel standing on the hood or in the cab when operating the truck.

(c) The following are basic procedures that can be adapted to most load handling operations.

2-6.7.1 Lifting a Palletized Load

(a) Locate the lift truck squarely in front of the load. Position the forks at the proper level, halfway between the upper and lower members of the pallet. With the mast in a vertical position and the forks parallel to the floor, slowly insert the forks into the pallet until the load rests against the forks faces. Unless the mast is vertical, the forks may hang up when they are inserted.

(b) Lift the load just enough to clear the stack beneath the load being removed. Then tilt the mast back enough to cradle the load.

(c) Slowly back the truck away from the stockpile and, when clear of all obstacles, lower the load. The load should always be carried as low as practicable for maximum stability and vision.

2-6.7.2 Travelling

CAUTION

If the load is so bulky that vision is obstructed, drive in reverse.

(a) Extra care must be taken when driving in reverse because the operator does not have constant view of the load. Request a guide when necessary. Obey all speed limit signs. Always travel at the safest speed which conditions allow, even if no speed limit signs are posted. Always look in the intended direction of travel.

WARNING

Overturning a lift truck may result in serious injury to the operator or bystanders.

(b) Avoid excessive speeds in combination with turning. Remain at safe distance from drop offs such as ramps, docks, dockboards and other inclines.

(c) When ascending or descending a grade, the loaded truck should be operated with the load up grade.

(d) An unloaded truck should be operated on all grades with the fork end of the truck downgrade.

(e) On all grades, the load and/or forks should be raised only as far as necessary to clear the grade and floor surfaces.

(f) Cross all railroad tracks slowly and at right angle.

(g) To prevent load spillage, apply the brakes gradually and firmly.

2-6.7.3 Positioning, Stacking and Unloading

(a) Drive the truck to the stacking area. If possible, position the truck squarely in front of the stock pile. Check all low-hanging obstructions. Raise the load with the mast slightly tilted back. With the load elevated, move the load slowly forward and position the load squarely over the stock pile. Stack the loads squarely and evenly to make use of all available space.

WARNING

Stock piles should always be stable to avoid injury to personnel and damage to equipment or stock.

(b) Tilt the mast forward to the vertical position and slowly lower the load into position.

(c) To withdraw the forks, slowly back the lift truck away from the load. Be certain the path behind you is clear.

(d) With the forks clear of the stock pile, lower them to within 2 inches of ground level before proceeding to travel.

2-6.7.4 Unpalletized Loads

(a) Tilt the forks forward so that their tips contact the ground. The truck should be square with the load, with a slight downward or forward tilt of the forks. Slowly and carefully move the truck forward and engage the load. Tilt the load back slightly.

(b) To stack unpalletized loads, position the truck squarely in front of the stock pile. With the mast tilted back, raise the forks to the proper level. Squarely position the load over the stockpile, then slowly lower the forks until they rest on the stack. Tilt the load forward slightly and begin to back the truck. Proceed carefully to prevent damage to the load. Be certain the path behind you is clear.

CAUTION

Exercise extra caution when travelling to the deposit area with an unpalletized load.

2-7 TRUCK OPERATION WITH CONTAINER HANDLER ATTACHMENT INSTALLED

2-7.1 Container Handlers. (Ref. Fig. 2-14)

(a) The truck comes equipped with two container handlers, a 20 Ft. Handler and a 40 Ft. Handler.

(b) These are secured to the Container Handler Attachment which must be installed on the carriage in a maintenance shop equipped with proper lifting equipment.

(c) With the Container Handler attachment on the carriage, either the 20 Ft. handler or the 40 Ft. handler may be installed and attached to the container handler attachment in the same manner.

(d) With the 20 Ft. handler installed, it is also possible to attach the 40 Ft. handler.

(e) Lower the 20 Ft. handler onto the 40 Ft. handler, and lock the 20 Ft. handler's twist locks in the slots of the 40 Ft. handler,.

(f) With the two handlers locked together, the 40 Ft. handler can be operated in the normal manner by changing the electrical plug and hydraulic hoses from the 20 Ft. to the 40 Ft. handler.

2-7.2 Container Handler Installation. (Ref. Fig.2-14)

(a) To attach the 20 Ft. or 40 Ft. handler to the container handler attachment complete the following steps:

1. Position the truck with the container handler attachment installed on the carriage, over the 20 Ft. (1) or 40 Ft. (9) handler so that the four Lift Chains (4) align with the four mounting holes on the handler.
2. Install the four Shackle Bolts (5), Nuts (3) and Cotter Pins (2).
3. Connect the two Hydraulic Hoses (7) and (8) from the truck to the quick disconnect fittings on the handler, ensuring the numbers on the hydraulic hoses match the numbers on the handler fittings.
4. Connect the electrical plug from the truck to the receptacle on the handler.
5. The handler is now ready for use.

2-7.3 Engaging and Lifting a container.

(a) Position the truck squarely in front of the container and raise the handler enough to clear the top of the container.

(b) Ensure mast is in the vertical position and slowly approach the container until the handler is approximately in place above the container.

(c) The handlers are equipped with corner guides to aid in positioning the handler on a container.

(d) Lower the handler and adjust sideshift and reach cylinders until twist locks engage in the container pockets.

NOTE

Using the articulating steering capabilities of the truck can also aid in alignment of the handler with the container.

(e) When the handler is in the correct position and the four twist locks are down in the four container pockets, the amber indicator light on the dash, to the right of the steering wheel, along with the red indicator light which indicates the twist locks are in the unlocked position, will be illuminated.

(f) The four twist locks can now be locked by moving the twist lock lever to the lock position.

NOTE

If the four corner twist locks are not completely down in the container pockets the amber indicator light will not come on and

the twist locks can not be locked.

(g) When the four twist locks are in the locked position the green indicator light and the amber indicator light will be illuminated and the red indicator light will turn off.

NOTE

At the corner of the two twist locks facing the operator, there is an orange metal flag which will move as the twist locks are locked and unlocked. When the twist locks are in the locked position the orange flag will protrude from the corner guides approximately 4 1/2 to 5 inches. When the twist locks are in the unlocked position the orange flag will protrude from the corner guides only 1 to 1 1/2 inches. These orange flags are connected to the twist lock devices mechanically to provide a guide to the operator as to the position of the twist locks should an electrical malfunction of the indicator lights on the dash occur.

(h) The container can now be lifted by slowly raising the carriage. When the container is raised the amber indicator light will turn off.

2-7.4 Lowering and Disengaging a Container.

(a) Position container and lower container into place. Lower carriage and handler until amber light is illuminated. The green indicator light will also be on as long as the twist locks are in the locked position.

(b) When the amber light is illuminated the twist locks can be unlocked by moving the twist lock control lever to the unlocked position.

(c) When the twist locks are in the unlocked position the red indicator light will be illuminated and the green indicator light will turn off.

(d) Slowly raise handler by lifting the carriage.

CAUTION

It is important to raise the handler as close as possible to a parallel position with the container to prevent binding of any of the twist locks in the container pockets.

(e) With the handler clear of the container, back the truck away from the container.

2-7.5 Engaging and Disengaging Containers which are not on level surfaces or not at right angles to the truck.

NOTE

When engaging containers which are not in an "ideal" position it is important to position the truck as close as possible to the container keeping in mind that the handler must be positioned parallel and square to the container in order to engage the four twist locks in the container pockets.

(a) The combination of truck articulation (Steering) and slew cylinder operation will position the handler at right angles to a container which can not be approached squarely.

(b) For containers which are not resting level on the ground the carriage can be oscillated to tilt the handler to a position parallel with the top of the container.

(c) Once the handler has been placed over the container in a parallel and right angled position by using the combination of controls mentioned above follow the engagement and disengagement procedures of Paragraphs 2-7.3 and 2-7.4.

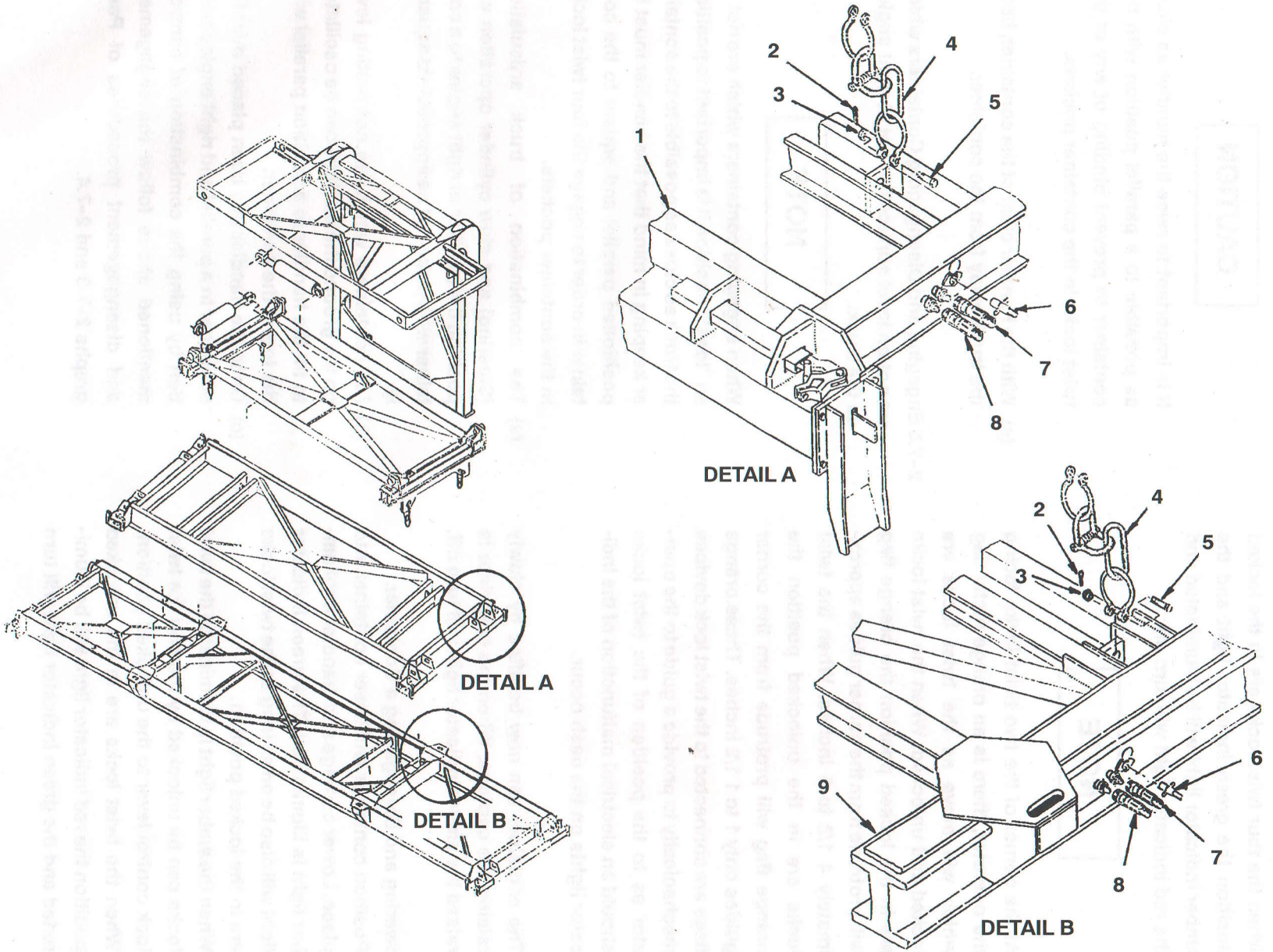


FIGURE 2-14 CONTAINER HANDLER INSTALLATION

CHAPTER III
OPERATOR INSPECTION, MAINTENANCE, AND LUBRICATION

-1 GENERAL

This chapter provides instructions for daily and weekly inspection, maintenance , and lubrication of the truck by the operator. Any deficiency, found during performance of these procedures, shall be reported to maintenance for correction. Except in emergencies, the vehicle shall not be operated until the deficiency is corrected. The inspection and lubrication schedule Table 3-1 pertains to normal operating conditions and should be adjusted for other environmental conditions.

3-2 SCHEDULED INSPECTIONS

Table 3-1 lists the scheduled inspections, and the intervals at which they should be performed. Inspection intervals to be observed by the operator on this truck are as follows:

DAILY- Before each use.

WEEKLY- Every week or 50 hours of operating time, whichever comes first.

Table 3-1 Scheduled Inspections

Type of Inspection	Inspection Interval	
	Daily	Weekly
VEHICLE EXTERIOR		
Inspect the following items for physical damage and secure mounting .		
Spot lights	X	
Front and Rear Flood Lights	X	
Taillights	X	
Container Handler Attachment Lift Chains, Shackles and Bolts		X
Mirrors	X	
Windows	X	
Pintle Hook	X	
Tires, Inflate to 110 PSI Front 110 PSI Rear	X	
Exhaust System		X
Drive Train		X
Inspect under vehicle for signs of leaking fluids or lubricants.	X	
Check Fuel Level	X	
Check Hydraulic Fluid Level	X	
VEHICLE INTERIOR		
Start engine and allow to reach operating temperature.Check the following items.		
Gauges. For correct operation.	X	
Exterior / Interior lights operate.	X	
All controls and accessories operate.	X	
Windows are clean.	X	
Parking brake operates.	X	

Table 3-1 Scheduled Inspections(continued)

Type of Inspection	Inspection Interval	
	Daily	Weekly
ENGINE COMPARTMENT		
Inspect battery and cables for corrosion , cracks, or other damage.		X
Inspect wiring harnesses for chafing, cracks, broken wires, or corrosion on connectors.		X
Inspect the drive belts for tension		X
Inspect coolant hoses for cracks, leaks .		X
Inspect hose clamps for tightness		X
Check coolant level.	X	
Check engine oil level.	X	
Check transmission fluid level.		X
Check brake fluid level.		X

3-3 MAINTENANCE AND SERVICING

3-3.1 Maintenance

In order to maintain an orderly appearance of interior and exterior of the truck, the operator shall perform the following:

(a) Clean seat, dash, and floor with a mild soap and warm water. Wipe dry or air dry.

(b) Wash exterior body with a mild soap and warm water. Do not wash in direct sunlight or allow cleaning agents to dry on finish.

(c) Clean glass, mirrors, and lights with any available glass cleaner. Wipe dry.

NOTE

The engine and chassis should be steam cleaned by maintenance personnel as required.

3-3.2 Servicing

The operator shall perform the following procedures:

(a) Perform inspections as set out in Table 3-1.

(b) Fill fluids and lubricants to proper level.

3-3.3 Check Engine Oil Level.

(a) If engine has been running, stop engine and wait five(5) minutes to allow oil to drain back into engine oil pan before checking oil level.

(b) Remove oil level dipstick from engine as shown and wipe clean.

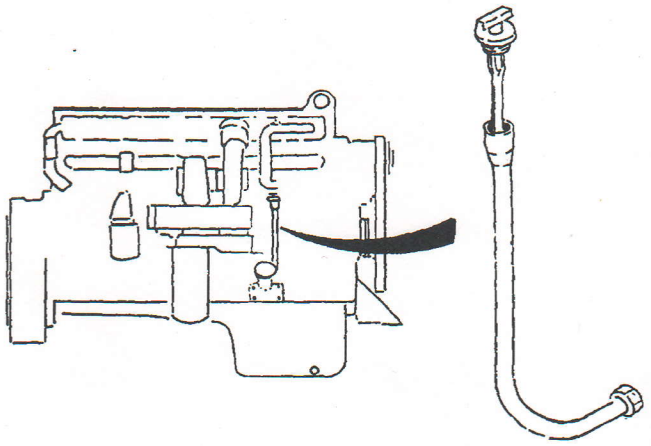


FIGURE 3-1 ENGINE OIL LEVEL DIPSTICK

(c) Install and remove oil level dipstick and read oil level.

(d) Bring oil to proper level as shown.

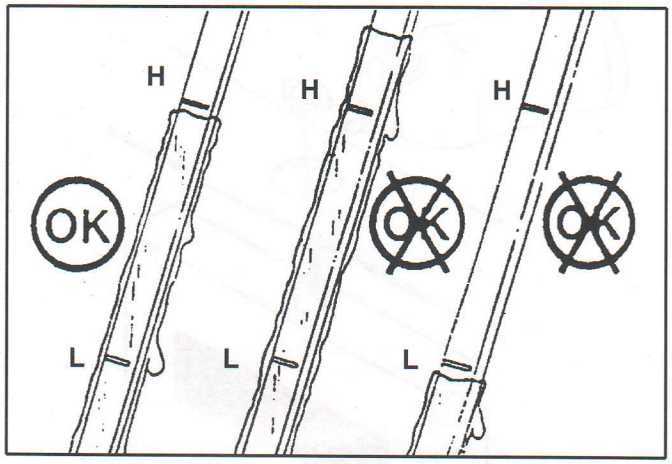


FIGURE 3-2 ENGINE OIL LEVEL

3-3.4 Adding Engine Oil

(a) Remove engine oil filler cap as shown.

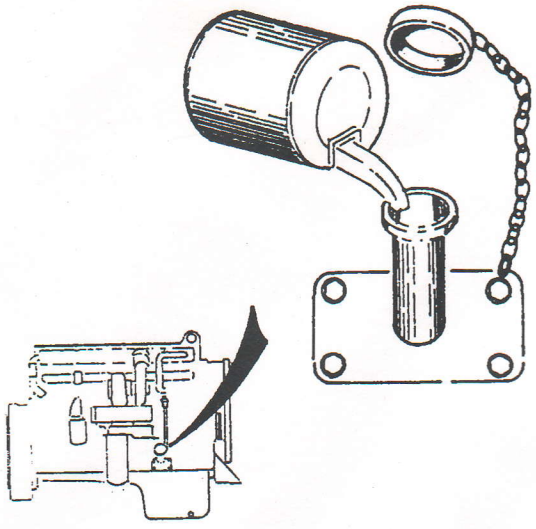


FIGURE 3-3 ADDING ENGINE OIL

(b) Add engine oil to correct level.

(c) Install engine oil filler cap.

3-3.5 Checking Coolant Level.

WARNING

Never remove the cap when the coolant is hot.

(a) Fill radiator to approximately 1"to 2" below filler neck with mixture of water and antifreeze.

(b) Refer to Recommended Table of Lubricants and Fluids for correct mixture. (Table 3-3)

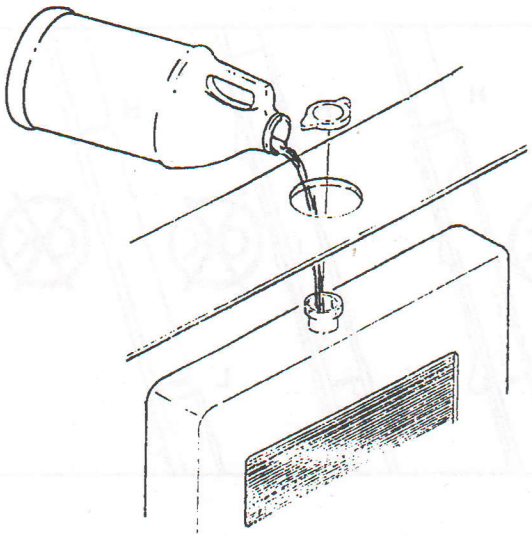


FIGURE 3-4 ADDING COOLANT

3-3.6 Checking Transmission Oil Level

(a) Run engine for two minutes.

(b) With engine running remove dipstick and check oil level.

(c) Add transmission oil if level is below add mark on dipstick. Refer to Recommended Lubricants and Fluids, Table 3-3.

(d) Install dipstick.

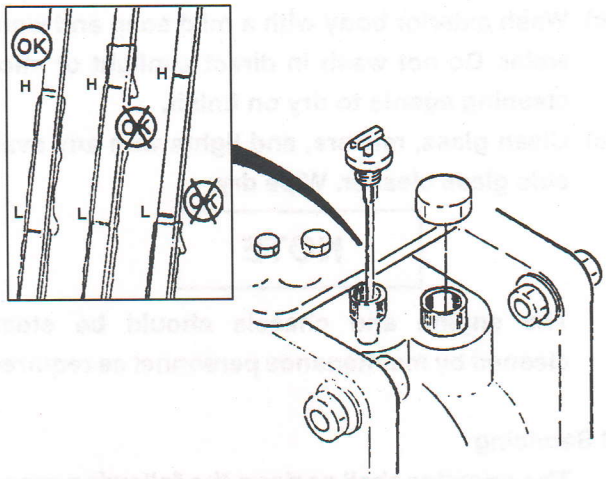


FIGURE 3-5 TRANSMISSION OIL LEVEL

3-3.7 Checking Brake Fluid

CAUTION

Before loosening the master cylinder cap, wipe or brush surrounding dirt to prevent it from entering the master cylinder.

(a) Remove master cylinder cap.

(b) Fill master cylinder to within 1/2 inch of cap opening. Refer to Recommended Lubricants and Fluids, Table 3-3.

(c) Install cap.

3-3.8 Checking Hydraulic Oil Level.

(a) Ensure Carriage is lowered to ground level and mast is in the vertical position.

(b) Hydraulic oil level should be between the black line (low) and red line (high) on the Hydraulic oil tank sight gauge.

(c) Fill Hydraulic oil tank as required. Refer to Recommended Lubricants and Fluids,Table 3-3.

3-3.9 Wheel and Tire Removal.

(a) Place a suitable lifting device under the axle of wheel and tire to be removed.

(b) Loosen wheel nuts.

(c) Raise Truck with lifting device and place jack stand or similar holding device under axle.

WARNING

Wheel and tire assembly weighs in excess of 800 Lbs. Use suitable lifting device to remove assembly.

(d) Remove wheel nuts.

(e) Remove wheel and tire assembly.

NOTE

For disassembly of wheel and tire, refer to Maintenance/Overhaul Instruction Manual TO 36M2-2-215-2.

3-3.10 Wheel and Tire Installation.

(a) Position wheel and tire assembly on axle.

(b) Install wheel nuts.

(c) Tighten wheel nuts to 450 ft.lbs torque.

(d) Remove jack stands and lower Truck with lifting device.

(e) Check tire pressure.

3-4 TROUBLESHOOTING.

The troubleshooting chart is provided to assist operators in identifying problems that may occur during operation of the vehicle.

Refer to the table below for information regarding probable cause and remedial disposition. See Table 3-2 for details.

Table 3-2 Troubleshooting Chart

Trouble	Probable Cause	Checkout Procedure and Remedial Action
ENGINE		
Engine will not crank.	1. Transmission shift lever not in neutral. 2. Battery terminals loose or corroded. 3. Battery discharged. 4. Starter or wiring defective. 5. Engine defective.	1. Place in neutral and start engine. 2. Refer to maintenance for cleaning or repair. 3. Slave start the vehicle. If failure occurs again, have maintenance check the system 4. Refer to maintenance. 5. Refer to maintenance.
Starter turns, engine won't start.	1. Engine out of fuel 2. Loose or broken wiring to fuel solenoid 3. Air in fuel system 4. Engine defective	1. Check fuel level. Fill as required. 2. Refer to maintenance 3. Refer to maintenance. 4. Refer to maintenance.
Engine starts then dies.	1. Fuel contaminated. 2. Low fuel level. 3. Engine defective.	1. Refer to maintenance for flushing. 2. Check fuel level. Fill as required. 3. Refer to maintenance.
Engine runs hot.	1. Low coolant level. 2. Low oil level. 3. Broken fan belt. 4. Radiator leaking or blocked.	1. Check coolant level . Fill as required. 2. Check oil level. Fill as required. 3. Refer to maintenance. 4. Refer to maintenance.

Table 3-2 Troubleshooting Chart (Continued)

Trouble	Probable Cause	Checkout Procedure and Remedial Action
TRANSMISSION		
Transmission temperature high.	1. Fluid level low. 2. Transmission cooler defective. 3. Using to high gear for the load being handled.	1. Check fluid level and fill . Check for leaks. If leaking refer to maintenance. 2. Refer to maintenance. 3. Change to lower gear selection.
Transmission will not shift .	1. Shift linkage stuck or broken. 2. Fluid level low. 3. Transmission defective.	1. Refer to maintenance. 2. Check fluid level and fill. Check for leaks. If leaking refer to maintenance. 3. Refer to maintenance.
DRIVE TRAIN - GENERAL		
Thumping or banging noise when vehicle is moving or direction of vehicle is changed e.g. forward to reverse.	1. Drive shaft bolts loose. 2.. Universal joints defective. 3. Axle(s) defective.	1. Refer to maintenance. 2. Refer to maintenance. 3. Refer to maintenance.
Vehicle will not move when shifted into gear with engine running.	1. Parking brake on. 2. Transmission fluid low. 3. Shift linkage requires adjustment or is broken. 4. Transmission is defective	1. Release parking brake. 2. Check fluid level. Fill as required. 3. Refer to maintenance 4. Refer to maintenance.

Table 3-2 Troubleshooting Chart (Continued)

Trouble	Probable Cause	Checkout Procedure and Remedial Action
HYDRAULIC SYSTEM - GENERAL		
No steering, no lifting, no tilt,	1. Hydraulic fluid level very low. 2. Hydraulic hose broken. 3. Hydraulic pump defective. 4. Faulty or cloged suction oil filter.	1. Check fluid level. Fill as required. 2. Refer to maintenance. 3. Refer to maintenance. 4. Refer to maintenance.
Slow cylinder movement or erratic.	1. Hydraulic fluid level low. 2. Hydraulic pump defective.	1. Check fluid level. Fill as required. 2. Refer to maintenance.
STEERING SYSTEM		
Hard steering.	1. Hydraulic fluid level low. 2. System leaking. 3. Steering orbitrol defective.	1. Check fluid level. If low add hydraulic fluid. 2. Check for leaks. If leaking refer to maintenance. 3. Refer to maintenance.
BRAKE SYSTEM		
No brakes.	1. Low or no air pressure. 2. Brake fluid low. 3. Master cylinder(s) defective	1. Refer to maintenance. 2. Check reservoirs. If low add brake fluid. 3. Refer to maintenance.
Parking brake will not hold vehicle.	1. Brake cable requires adjustment 2. Brake cable broken 3. Brake pads require adjustment 4. Brake pads defective	1. Adjust hand brake lever. 2. Refer to maintenance. 3. Refer to maintenance. 4. Refer to maintenance.

SERVICE POINTS	LUBRICATION CHART LIFTKING FORKLIFT MODEL LK50C TRUCK LAYOUT OPERATING HOURS: WEEKLY (50 Hours) LUBRICANT: MULTI PURPOSE GREASE	NUMBER OF POINTS
	IDENTIFICATION OF POINTS	
1	Tilt Cylinder Front Pin	2
2	Tilt Cylinder Rear Pin	2
3	Pivot Point, Articulating, Upper	1
4	Pivot Point, Articulating, Lower	1
5	Steering Cylinder Rod End	2
6	Steering Cylinder Base End	2
7	Cradle Pin	2
8	Driveshaft, Front	9
9	Driveshaft, Rear	7
10	Driveshaft, Connect Converter & Transmission	5

NOTE 1- Before lubricating, wipe or brush surrounding dirt from fittings

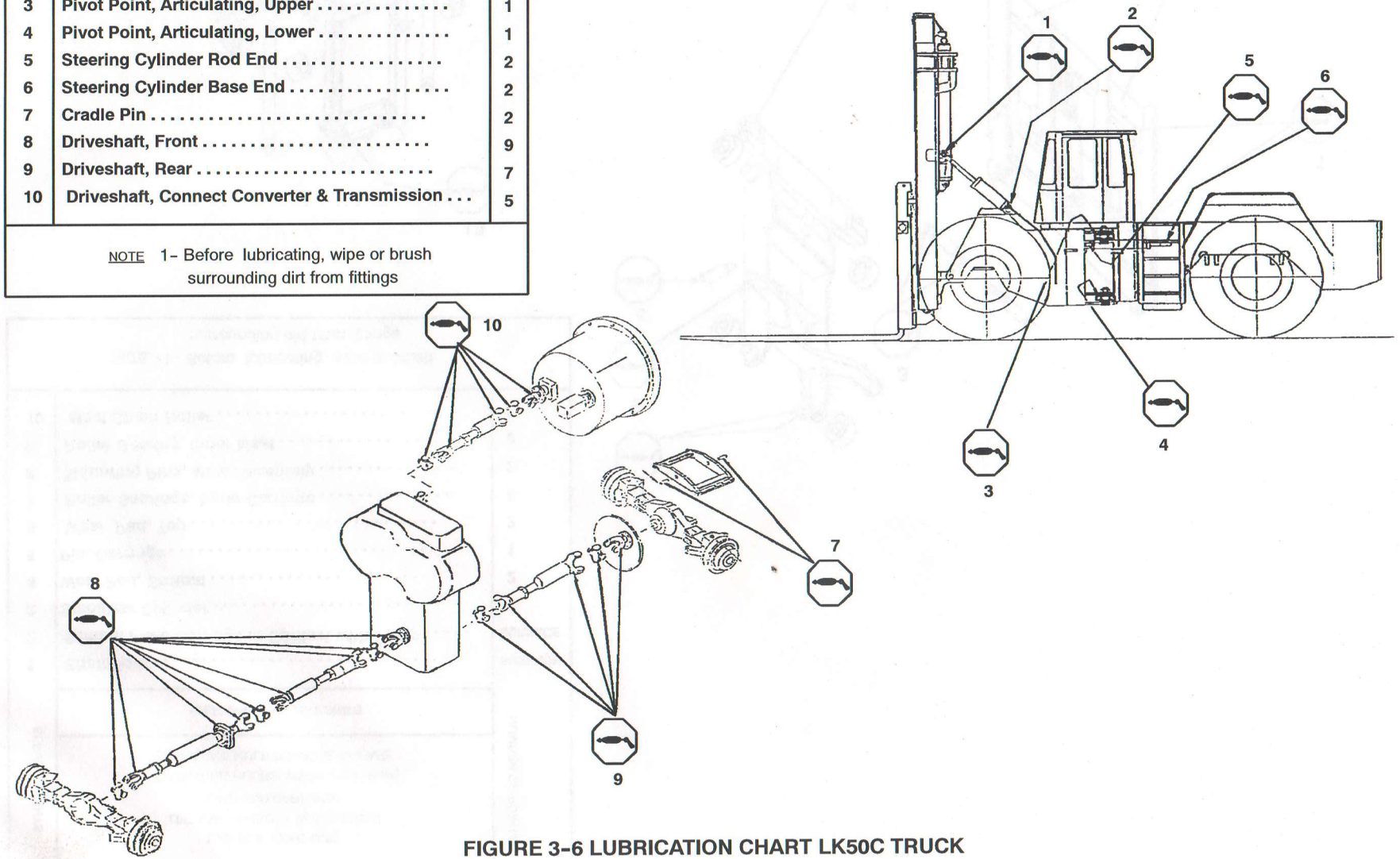


FIGURE 3-6 LUBRICATION CHART LK50C TRUCK

LUBRICATION CHART
LIFTKING FORKLIFT MODEL LK50C
MAST AND CARRIAGE
OPERATING HOURS: WEEKLY (50 Hours)
LUBRICANT: MULTI PURPOSE GREASE

SERVICE POINTS	IDENTIFICATION OF POINTS	NUMBER OF POINTS
1	Shaft Fork	SURFACE
2	Bottom Plate Carriage in Contact with Forks	SURFACE
3	Stabilizer Cylinder	4
4	Wear Pad, Bottom	2
5	Pin, Carriage	1
6	Wear Pad, Top	2
7	Roller Bearings, Inner Carriage	8
8	Mounting Pins, Mast Assembly	2
9	Roller Bearing, Inner Mast	8
10	Mast Chain Roller	2

NOTE 1- Before lubricating, wipe or brush surrounding dirt from fittings

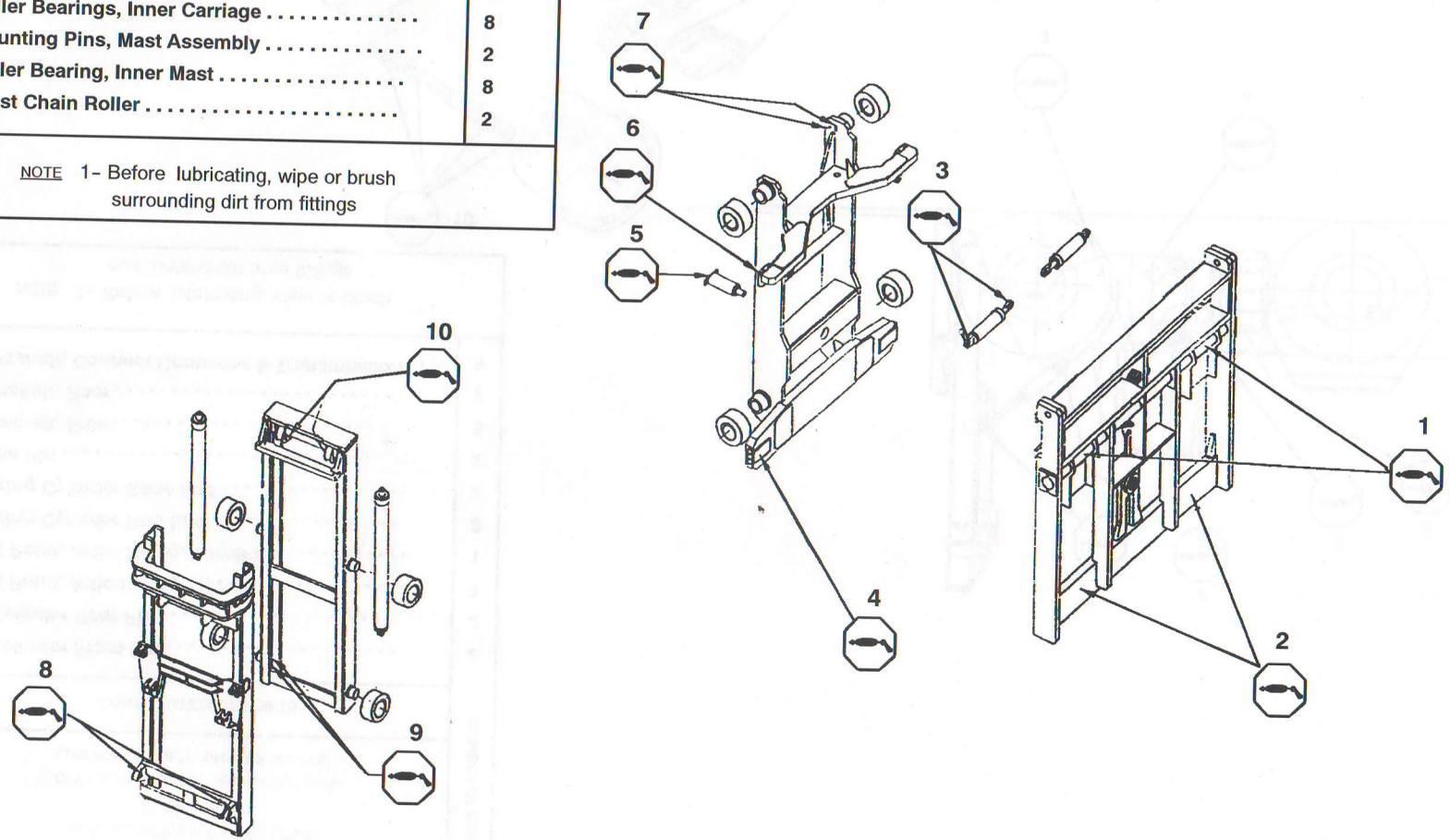


FIGURE 3-7 LUBRICATION CHART MAST AND CARRIAGE

LUBRICATION CHART
LIFTKING FORKLIFT MODEL LK50C
ATTACHMENT AND CONTAINER HANDLER, 20 Ft.
OPERATING HOURS: WEEKLY (50 Hours)
LUBRICANT: MULTI PURPOSE GREASE

SERVICE POINTS	IDENTIFICATION OF POINTS	NUMBER OF POINTS
1	Roller Bearings	4
2	Sideshift Cylinder, Container Handler	2
3	Shaft, Locking Device and Safety Pin (Lube Oil) . . .	8

NOTE 1- Before lubricating, wipe or brush surrounding dirt from fittings

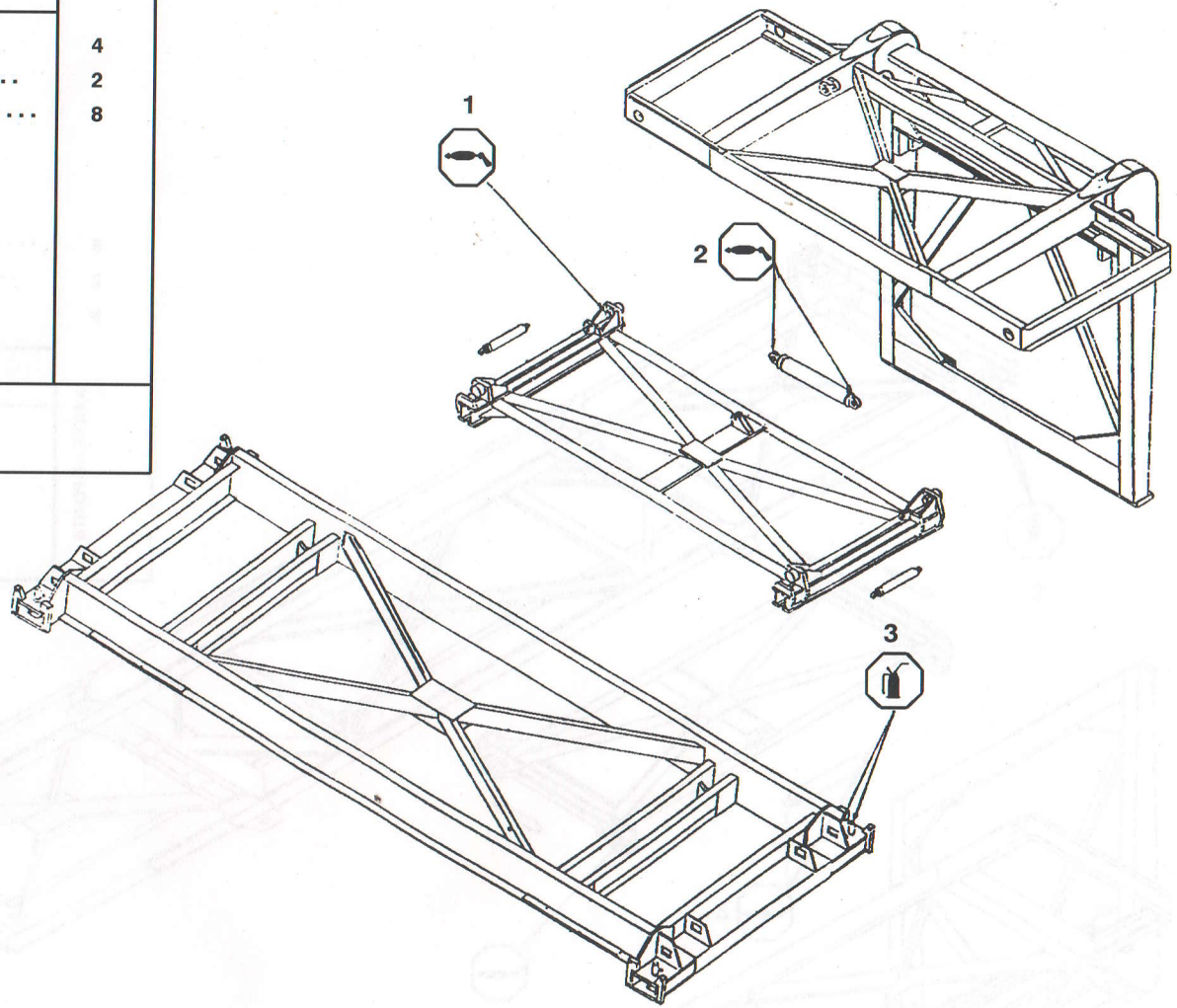
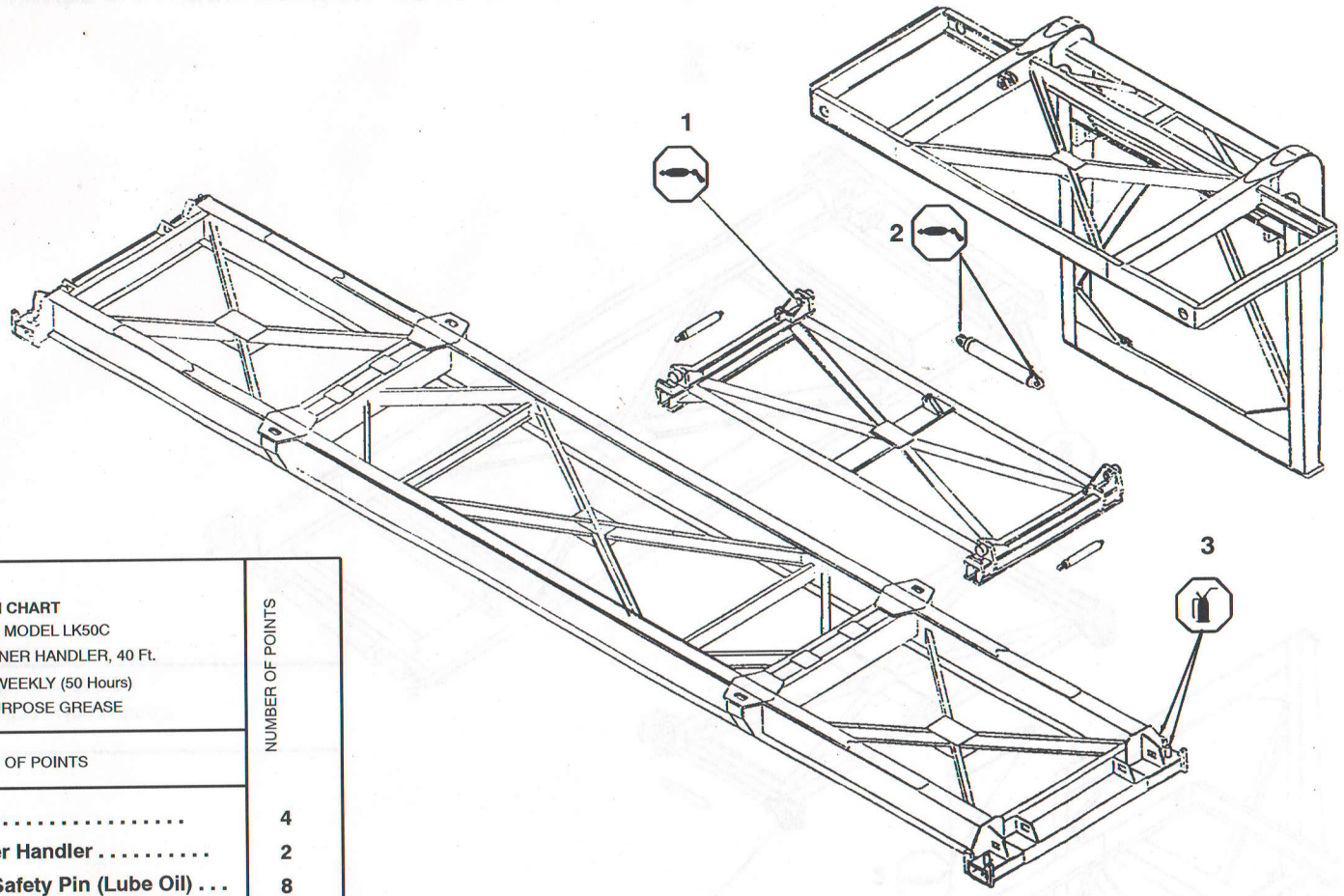


FIGURE 3-8 LUBRICATION CHART CONTAINER HANDLER 20 FT. AND ATTACHMENT



LUBRICATION CHART
LIFTKING FORKLIFT MODEL LK50C
ATTACHMENT AND CONTAINER HANDLER, 40 Ft.
OPERATING HOURS: WEEKLY (50 Hours)
LUBRICANT: MULTI PURPOSE GREASE

SERVICE POINTS	IDENTIFICATION OF POINTS	NUMBER OF POINTS
1	**Roller Bearings**	4
2	**Sideshift Cylinder, Container Handler**	2
3	**Shaft, Locking Device and Safety Pin (Lube Oil)** . . .	8

NOTE 1- Before lubricating, wipe or brush surrounding dirt from fittings

FIGURE 3-9 LUBRICATION CHART CONTAINER HANDLER 40 FT AND ATTACHMENT

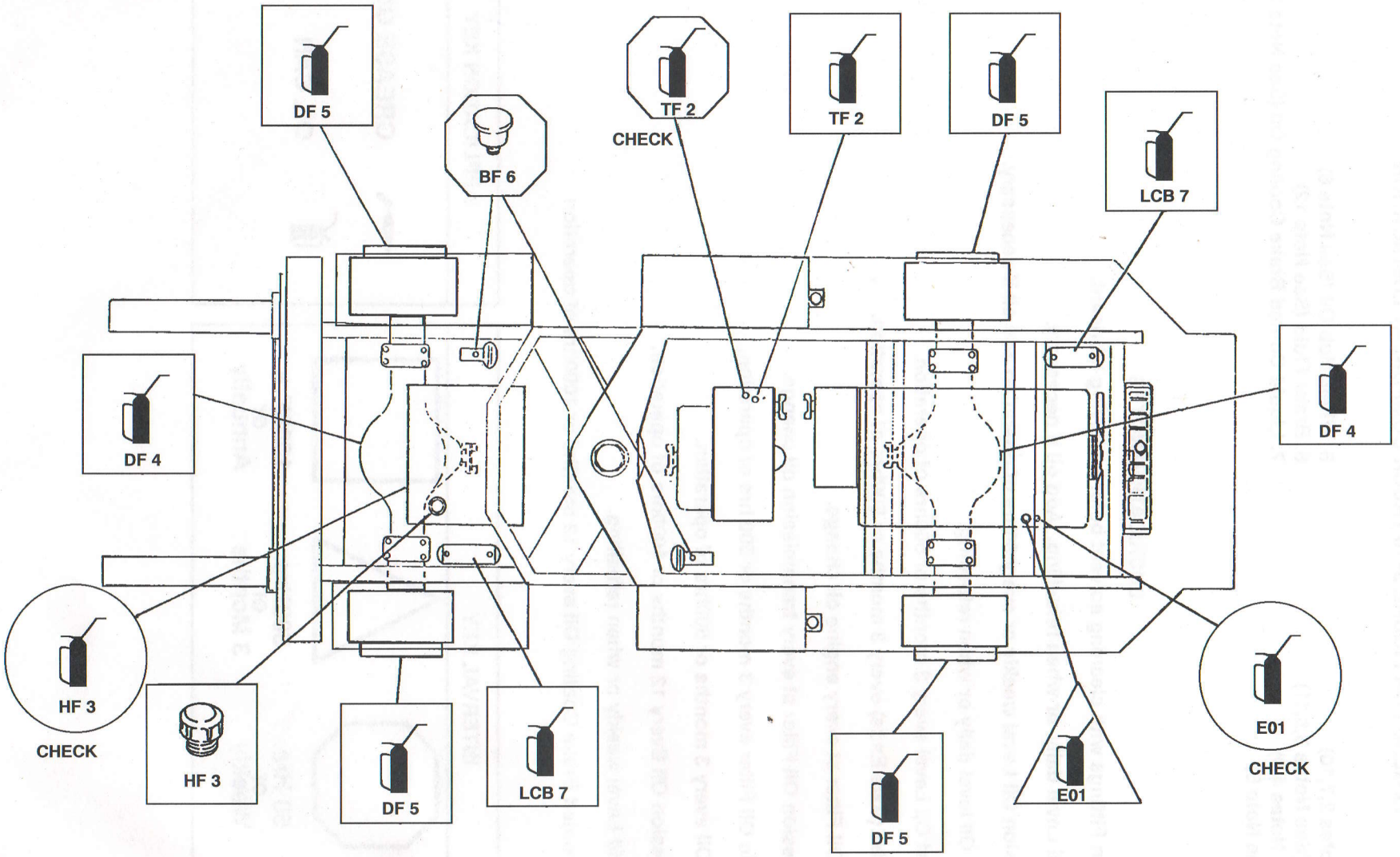


FIGURE 3-10 LUBRICATION GUIDE COMPONENTS

LEGEND FOR FIGURE 3-10 TRUCK COMPONENT LUBRICATION

1. Engine Oil (See Notes 2,7,10)
2. Transmission Oil (See Notes 3,8,11)
3. Hydraulic Oil (See Notes 4,9)
4. Differential Oil (See Note 5)
5. Wheel Hub Oil (See Note 6)
6. Brake Fluid (See Note 12)
7. Liquid Cooled Brake Cooling Oil (See Note 13)

LUBRICATION NOTES

1. Clean Lubrication Fittings with cleaning solvent before applying lubricant.
2. Check Engine Oil Level daily, or when refuelling. Add oil if necessary.
3. Check Transmission Oil Level weekly or every 50hrs of operation add oil if necessary.
4. Check Hydraulic Oil level daily or when refuelling.
5. Check Differential Oil Level every 3 months or 500hrs of operation.
6. Check Wheel Hubs (Axle Ends) every 3 months or 500hrs of operation.
7. Change Engine Oil Filter at every engine oil change.
8. Change Transmission Oil Filter at every transmission oil change.
9. Change Hydraulic Oil Filter every 3 months or 500 hrs of operation.
10. Change Engine Oil every 3 months or 500hrs of operation.
11. Change Transmission Oil Every 12 months or 1000hrs of operation.
12. Check Brake Fluid Level weekly or when refuelling.
13. Change Liquid Cooled Brake Cooling Oil every 12 months or 1000hrs of operation

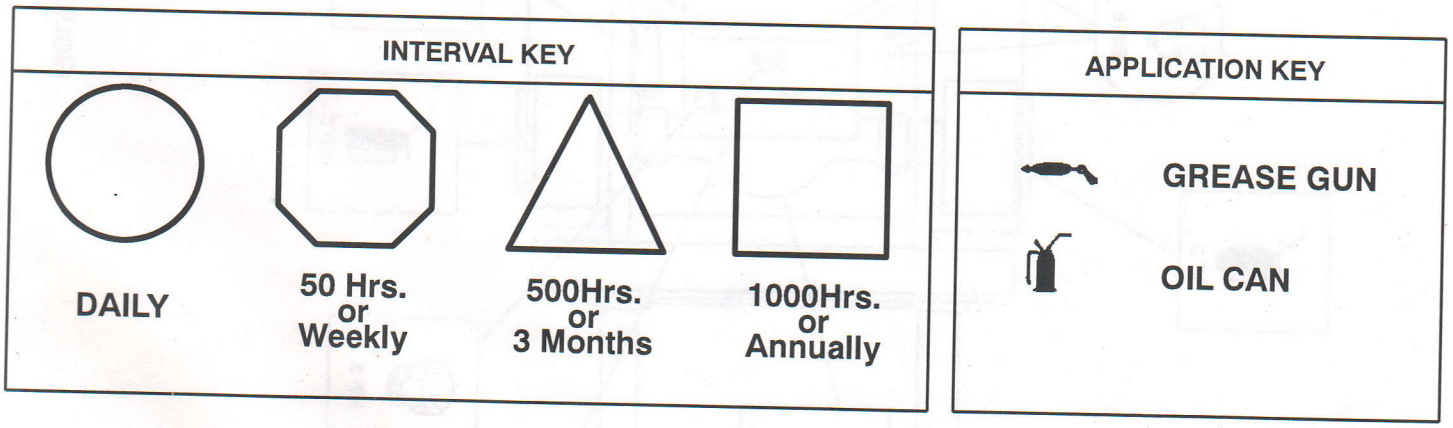


TABLE 3-3 RECOMMENDED LUBRICANTS AND FLUIDS

APPLICATION	LUBRICANT	AMBIENT TEMPERATURES		
		-40 Deg.F to 0 Deg.F	0 Deg.F to 80 Deg.F	32 Deg.F to 100 Deg.F
ENGINE EO	MIL-L-2104D		SAE 10W30	
	SYNTHETIC OIL	SAE 5W		
TRANSMISSION TF	TRANSMISSION FLUID	DEXRON II OR MIL-L-46167	DEXRON II	
HYDRAULIC SYSTEM HF	MIL-L-2104D		SAE 10W	
	SYNTHETIC OIL	SAE 5W		
AXLES DF	MIL-L-2105C	75W	80W90	
GREASE POINTS GP	MULTIPURPOSE GREASE	NO.1 CONSISTENCY		
COOLANT EG	WATER	40%	50%	
	ANTIFREEZE GLYCOL BASED	60%	50%	
BRAKE SYSTEM BF	MINERAL BASE HYDRAULIC OIL	ALL		
LIQUID COOLED BRAKE LCB	MIL-L-2104D		SAE 10W	
	SYNTHETIC OIL	SAE 5W		