

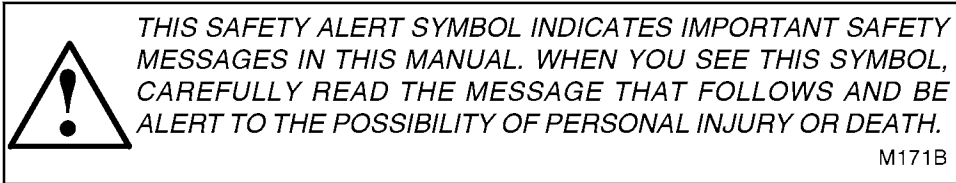
**CASE**  
**250/500/650/1000**  
**Series B Travelift**  
**(Drott Product)**

**Service Manual**

S406243M2

Reprinted




**CASE**



If Safety Decals on this machine use the words **Danger, Warning or Caution**, which are defined as follows:

- **DANGER:** Indicates an immediate hazardous situation which if not avoided, will result in death or serious injury. The color associated with Danger is RED.
- **WARNING:** Indicates an potentially hazardous situation which if not avoided, will result in serious injury. The color associated with Warning is ORANGE.
- **CAUTION:** Indicates an potentially hazardous situation which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

If Safety Decals on this machine are ISO two panel Pictorial, decals are defined as follows:

- The first panel indicates the nature of the hazard.
- The second panel indicates the appropriate avoidance of the hazard.
- Background color is YELLOW.
- Prohibition symbols such as   and  if used, are RED.



# WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH. BEFORE USING THIS MACHINE, MAKE CERTAIN THAT EVERY OPERATOR:

- Is instructed in safe and proper use of the machine.
- Reads and understands the Manual(s) pertaining to the machine.
- Reads and understands ALL Safety Decals on the machine.
- Clears the area of other persons.
- Learns and practices safe use of machine controls in a safe, clear area before operating this machine on a job site.

It is your responsibility to observe pertinent laws and regulations and follow Case Corporation instructions on machine operation and maintenance.

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**Thanks very much for your reading,  
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## SAFETY PRECAUTIONS



**THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.**



**WARNING:** Always use a nonflammable solvent for cleaning parts. **DO NOT** use gasoline or other flammable substances.



**WARNING:** Clean Rubber parts by washing in clean brake fluid. **DO NOT** use mineral base cleaning solvents such as acetone or paint thinner on any rubber parts. If a mineral base solvent is used, the rubber will start to deteriorate and continue to deteriorate after the part is put back into service. The continued deterioration of the rubber could cause the part to fail.



**WARNING:** **DO NOT** service the machine with the engine running. If necessary to make checks with engine operating, have one man stay at the controls while the other makes the check.



Whenever servicing the machine, always tag mark the ignition switch to alert other operators and prevent accidental start-ups.



**WARNING:** To help prevent eye injury, wear eye protection when servicing this machine.



**CAUTION:** When checking coolant level, remove cap on radiator slowly to relieve pressure within the system.



**CAUTION:** Disconnect both leads from the batteries when working on the engine or electrical system. Always disconnect the Ground lead first.



**CAUTION:** Never attempt to alter any safety device.



**WARNING:** **BATTERIES PRODUCE EXPLOSIVE GASES.** Keep flames, sparks and cigarettes away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries.



**POISON/DANGER:** **BATTERY ACID CAUSES SEVERE BURNS.** Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing.

Antidote: **EXTERNAL** - flush with water. **INTERNAL** - drink large quantities of water or milk. Follow with Milk of Magnesia, beaten egg or vegetable oil. Call physician immediately. **EYES:** Flush with water for 15 minutes and get prompt medical attention.

**KEEP OUT OF REACH OF CHILDREN.**



**WARNING:** Do not allow battery fluid to contact skin, eyes, fabric or painted surfaces. Battery fluid is sulfuric acid solution which could cause serious injury or property damage.



**WARNING:** Keep hands, feet and clothing away from gears, wire ropes, drums and sheaves during operation.



**CAUTION:** When working on the hydraulic system, be sure to relieve all pressure in the lines by working the controls back and forth several times before removing component.



**CAUTION:** Face ladder when ascending or descending. Keep platforms and ladders free from grease or oil. Keep soles of your shoes clean also. Always use both hands when climbing on or off the machine.

**SAFETY PRECAUTIONS (CON'T)**



**DANGER:** Exhaust fumes can kill. If necessary to start engine in an enclosed area, be sure to provide adequate ventilation.



Store tools, oil cans, replacement items, etc. in tool box or designated storage area. Do not allow these items to lie loose in the cab or on platforms.



**CAUTION:** Alert all personnel who may be servicing or in path of machine before starting engine. Be sure all operating controls are in neutral and parking brake is set.



Keep a fire extinguisher on hand and **KNOW HOW TO USE IT.** Check it regularly to ensure it is in good working order.



Never smoke while refueling, servicing the fuel system or working with batteries.



**CAUTION:** Hydraulic systems are high pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissues causing serious injury. Use a piece of wood or cardboard when looking for leaks - never use the hands or other parts of the body.



**Caution:** Use extreme care when working with tires. Tires can come apart with explosive force. **NEVER ATTEMPT TO DISASSEMBLE A WHEEL WITH AN INFLATED TIRE MOUNTED ON IT.**

Relieve hydraulic pressure before disconnecting circuits. When reassembling, make absolutely certain that all connections are tight.



**WARNING:** Make sure that any cribbing or jacking device is capable of supporting the machine's weight. Serious injury to personnel and damage to machine could result if the cribbing on a jack should slip under load.

If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious complications may arise if medical attention is not given at once.



**CAUTION: ENGINE FAN AND BELTS-** To prevent possible serious injury avoid contact with rotating fan and belts.



Wear proper safety equipment. Do not wear loose fitting clothing that may become entangled in machinery or will encumber your movement.



**WARNING:** Always use a bar to guide wire rope onto sheaves and drums. **NEVER USE YOUR HANDS.**



Decals provide operating instructions and safety information to the Operator. To help prevent accidents or personal injury, clean or replace any decal that cannot be easily read.



**WARNING:** Inspect Wire Rope frequently for twists, frayed areas, kinks or rust. Replace rope immediately if it shows signs of weakening. Never Handle wire rope with bare hands. Wear gloves.

**GENERAL INFORMATION**

**INTRODUCTION**

This manual is designed to serve as a guide in maintaining and servicing the Case Series "B" Industrial Travelifts. Models covered are the 250B, 500B, 650B and 1000B (herein referred to simply as 250, 500, 650 and 1000). All components and systems are discussed, with the exception of the engine which is covered in the engine manufacturer's manual included with each machine.

The manual is divided into four sections, preceded by a general section on safety, machine description and serial number information.

A separate section entitled "Scheduled Preventive Maintenance" is provided to cover all components which require periodic maintenance. Refer to this section whenever performing normal maintenance. It includes a Maintenance Schedule, Component Capacities, Hydraulic System Operating Pressures, Service Chart and Maintenance Details.

The Service section is divided into three general areas - Mechanical, Electrical and Hydraulic. Included in the Service section is general descriptive and Operational information to provide a basic understanding of each system and its components. All disassembly and repair information is contained in the last section of the manual. The disassembly and repair instructions are arranged in the general sequence established in the service section, i.e. Mechanical, Electrical and Hydraulic.

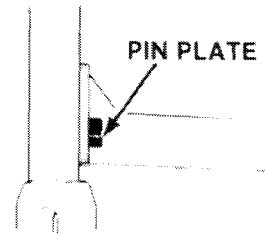
Troubleshooting charts for all the systems are contained in a separate section (See Section 3) for quick reference when troubleshooting the unit.

Torque Charts and Schematic Drawings for the Electrical and Hydraulic systems are located in back of this manual for easy reference when servicing or troubleshooting the machine.

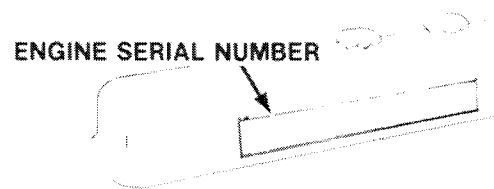
If further service information is required, contact your nearest Case dealer or Service Representative for assistance.

**PARTS AND SERVICE**

When writing or calling the dealer or manufacturer about the TRAVELIFT always refer to the model and Product Identification Number (PIN) as well as the part name and location. The PIN plate is located on the left side beam (Figure 1). The engine serial number plate is located on the side of the engine valve cover. In addition, all major components, such as pumps, motors, transmissions, etc. are identified by a serial plate on the component housing.



**Figure 1. Product Identification Number**



**Figure 2. Engine Serial Number Plate**

**EXPLANATION OF INTERNATIONAL SYMBOLS**

Symbols speak a universal language. International symbols are used in this manual to help identify components requiring service.

 GEAR BOX	 HYDRAULIC RESERVOIR	 HYDRAULIC FILTER	 FILTER, AIR
 COOLANT	 ENGINE OIL	 DIESEL FUEL	 LUBRICATE with Multigrade Oil



NOMENCLATURE

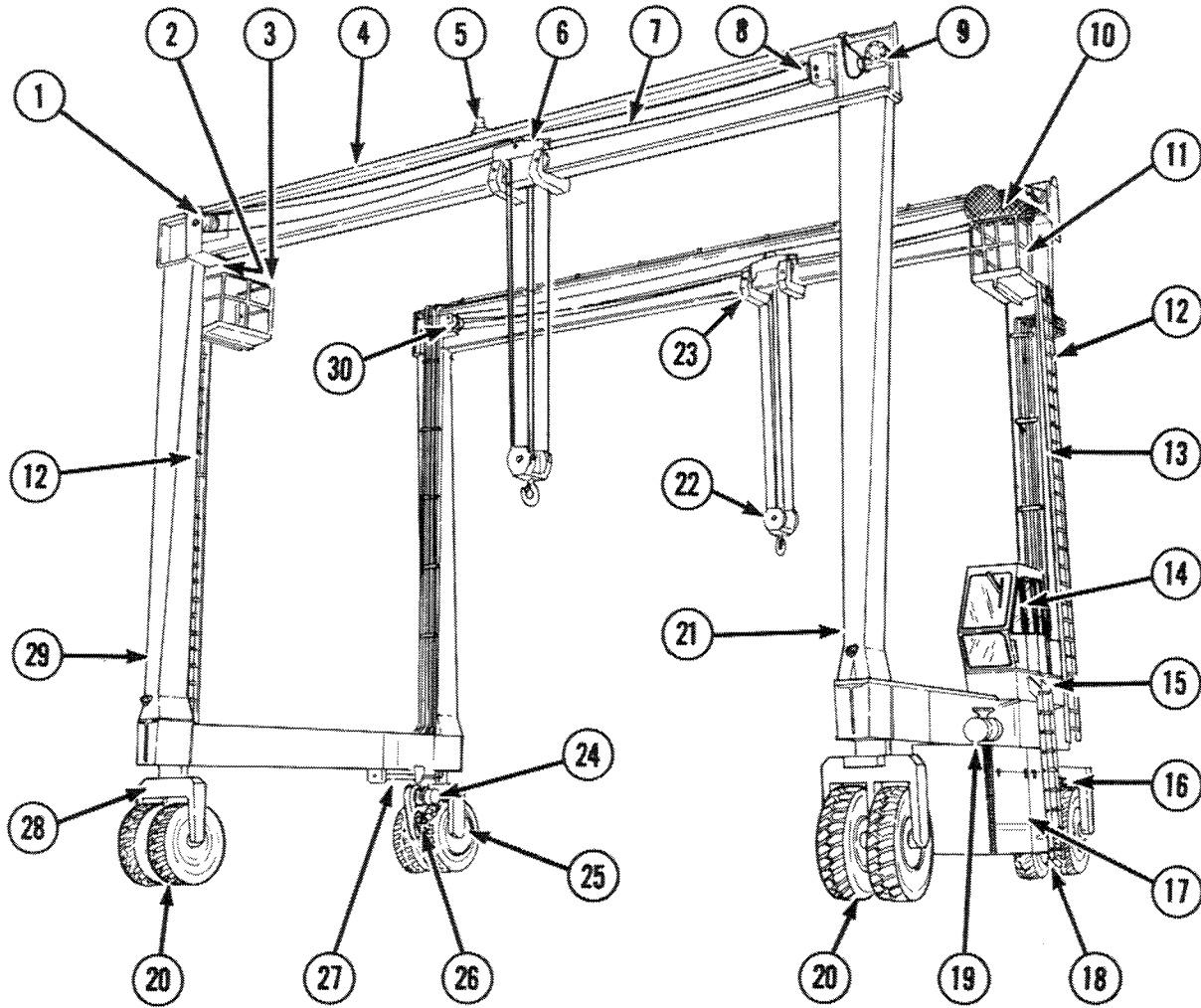


Figure 3. Nomenclature (Typical) (1000 Model Shown)

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1. Hoist Drum (Front Hoist)</li> <li>2. Location of Front Hoist Motor, Brake and Gearbox</li> <li>3. Service Platform (Front)</li> <li>4. Top Front Beam</li> <li>5. Rotating Beacon</li> <li>6. Front Trolley (Single Trolley Shown)</li> <li>7. Traverse Wire Rope</li> <li>8. Idler Sheaves (Hoist)</li> <li>9. Traverse Motor and Gearbox (Front)</li> <li>10. Rear Hoist Motor, Brake and Gearbox</li> <li>11. Service Platform (Rear)</li> <li>12. Access Ladders</li> <li>13. Left Rear Column</li> <li>14. Operator's Cab w/Controls</li> <li>15. Location of Main Control Valves</li> <li>16. Location of Left Drive Motor, Brake and Gearbox</li> </ul> | <ul style="list-style-type: none"> <li>17. Engine Compartment (Location of Pumps, Transmission, Hydraulic Reservoir and Fuel Tank)</li> <li>18. Rear Drive/Steer Wheels (Left Side)</li> <li>19. Air Cleaner</li> <li>20. Front Wheels</li> <li>21. Left Front Column</li> <li>22. Hook Block</li> <li>23. Rear Trolley (Single Trolley Shown)</li> <li>24. Right Drive Motor, Brake and Gearbox</li> <li>25. Wheel Yoke (Steering)</li> <li>26. Drive Chain and Sprocket</li> <li>27. Steering Cylinder and Linkage</li> <li>28. Wheel Yoke (Fixed)</li> <li>29. Right Front column</li> <li>30. Traverse Wire Rope Drum (Rear)</li> </ul> |
|--|---|

## GENERAL DESCRIPTION

### Directional Reference

All directional references in this manual, unless otherwise noted, are as viewed from the operator's seated position. "Left" is the operator's left, "Right" is the operator's right. The operator's cab is located on the left side beam and faces the front of the machine. On machines equipped with high cab, the cab is mounted to the left rear column.

### GENERAL DESCRIPTION

The TRAVELIFT is a self-propelled, hydraulically powered straddle crane. The unit has moveable hoists and can be used with a variety of load handling devices. This manual covers four basic models: 250, 500, 650, and 1000 Travelift, Series "B". These models are available in various widths and heights to meet the individual yard layout or transport need of the end user. The four models are similar. Significant differences will be noted in the text.

The 250, 500 and 650 models have single wheels and single drive units. The 1000 model is equipped with dual wheels and tandem drives. On all units, the front wheels are non-drive, non-steer wheels; the rear wheels drive and steer the Travelift.

The Travelift has front and rear hoists capable of traversing within the limits of the machine side beams. Single or dual trolleys are available for each unit.

All units use a Detroit Diesel engine. Mechanical energy generated in the engine is converted to hydraulic power by two piston pumps and a double gear pump. On the 250, 500 and 650 models, the piston pumps are driven off a double pump drive transmission mounted to the rear of the engine, and the double gear pump is driven off the front of the engine. The 1000 model Travelift uses a triple pump drive transmission, and all of the hydraulic pumps are driven off the rear of the engine. The piston pumps supply hydraulic power for operation of the DRIVE, HOIST and TRAVERSE functions. The double gear pump powers the STEERING, SERVO and SUPERCHARGE functions.

The inlet line to the main hydraulic pumps is supercharged to help assure an adequate supply of oil to the pumps and prevent cavitation. Return oil from the main control valves is routed back to the pump inlet. Additional oil is pumped into the return line by both sections of the double gear pump; this provides the supercharge pressure.

Volume output of the two piston pumps is controlled by a foot pedal in the cab, mechanically linked to the pump control lever. Hydraulic valves (located behind the cab) direct the hydraulic fluid from the pumps to the various functions. The valve spools are mechanically linked to levers in the operator's cab. The functions are selected by positioning the lever to the desired position, then depressing the pump volume control pedal.

The Drive System is powered by fixed displacement, piston-type hydraulic motors coupled to gearboxes, and through roller chains, to the rear wheels. A disc brake on the input to each drive gearbox serves as both a service and a parking brake.

Steering is accomplished by hydraulic cylinders and mechanical linkage. The steering cylinders are controlled by an orbitrol mounted to the base of the steering column.

The Traverse System moves the trolleys across the front and rear beams, and is powered by a hydraulic motor coupled to a gearbox. The gearbox is coupled to a friction drive drum which moves the trolley by turning a continuous wire rope dead-ended to either end of the trolley frame.

The hoist is powered by a piston-type hydraulic motor. The motor is coupled to a gearbox and drives the hoist drum through a roller chain on all units except the 250 model. On the 250, the gearbox is coupled directly to the hoist drum. The hoist gearbox is equipped with a spring-applied, hydraulically released brake on its input shaft. The brake is released when the hoist circuit is hydraulically actuated. To provide power down control of the load, the hoist system contains counterbalance valves.

**SPECIFICATIONS**

**Engine Specifications:**

**\*NOTE: Add 2 quarts (2.1L) with filter change**

**DETROIT DIESEL 3-53 Diesel Engine (250B Installation)**

Horsepower..... 70 at 2000 rpm  
 Oil Pressure (Normal Range)..... 30-60 psi  
 Maximum Rated rpm..... 2400 rpm  
 Crankcase (Oil) Capacity..... 10-1/2 quarts (9.9 liters)\*  
 Cooling System..... 4½ gallons (19 liters)

**DETROIT DIESEL 3-53 Diesel Engine (500B Installation)**

Horsepower..... 79 at 2400 rpm  
 Oil Pressure (Normal Range)..... 30-60 psi  
 Maximum Rated rpm..... 2400 rpm  
 Crankcase (Oil) Capacity..... 10-1/2 quarts (9.9 liters)\*  
 Cooling System..... 4½ gallons (19 liters)

**DETROIT DIESEL 4-53 Diesel Engine (650B Installation)**

Horsepower..... 114 at 2600 rpm  
 Oil Pressure (Normal Range)..... 30-60 psi  
 Maximum Rated rpm..... 2600 rpm  
 Crankcase (Oil) Capacity..... 10-1/2 quarts (9.9 liters)\*  
 Cooling System..... 5 gallons (21.1 liters)

**DETROIT DIESEL 4-71 ENGINE (1000B Installation)**

Horsepower..... 147 at 2475 rpm  
 Oil Pressure (Normal range)..... 30-60 psi  
 Maximum Rated rpm..... 2475 rpm  
 Crankcase (Oil) Capacity..... 14 quarts (13.25 liters)\*  
 Cooling System..... 8½ gallons (32.2 liters)\*

**Hoist Specifications:**

Type of hydraulic motors..... Piston  
 Drive Gearbox..... Worm Gear  
 Final Drive..... Shaft mounted direct drive on Series 250, Roller Chain on others  
 Wire rope size..... 7/16" on 250, 5/8" on others

**Traverse Specifications:**

Type..... Wire Rope Friction drive  
 Type of Hydraulic Motors..... Gear  
 Drive Gearbox..... Worm Gear  
 Type of wire rope..... Same as for Hoist Specifications

**Other Systems and Components:**

Drive System..... Hydro-static on rear wheels  
 Service Brakes..... Disc-type, hydraulically actuated; located at Drive Transmission input,  
 foot pedal operated  
 Parking Brakes..... Hand Lever operated at Transmission input  
 Steering..... Front pivot, rear steering

## **SECTION 1 SCHEDULED PREVENTIVE MAINTENANCE**

### **INTRODUCTION**

Scheduled preventive maintenance is essential to keeping the TRAVELIFT in top operating condition. Decide from the start upon a maintenance schedule that will best suit your particular needs. The type of work being done, the size of loads, and ground and weather conditions should all be taken into consideration when establishing a schedule.

Use the engine hourmeter along with a calendar and checklist to ensure that all recommended maintenance is performed at the prescribed intervals. Recommendations contained in this manual are based upon average operating conditions, and should be considered as **MINIMUM** maintenance requirements for the TRAVELIFT.

Depart from recommended intervals only when conditions warrant shortening them, or when changes in ambient temperature require it. Recommended intervals should be shortened whenever the machine is operated under extreme conditions, such as on a dusty job site, in extreme heat or cold, under intermittent operation or extremely heavy loads.

### **LUBRICANTS**

It is not the policy of J. I. Case to publish lists of approved lubricants or to guarantee lubricant performance. The responsibility for the quality of any lubricant rests solely with the distributor or manufacturer of the lubricant.

In various paragraphs of this manual, you will find the statement "Use (lubricant brand name) or functional equivalent". This statement does not constitute an unconditional guarantee of the performance of the brand of oil mentioned; it is intended only as a guide to the type of lubricant recommended for a given application.

### **SOUNDPROOFING INSULATION**

Care must be taken when cleaning the cab interiors that have soundproofing insulation. To clean the insulating material, use only a vacuum cleaner or damp cloth with plain water or mild detergent solution.

DO NOT steam clean, wash or rinse with a water hose, etc., since only slight wetting of the insulation will substantially reduce its soundproofing capabilities.

### **SPARK ARRESTOR**

Laws of some states or provinces may require that this unit be equipped with a spark arrestor or spark arresting muffler. The state of California, as an example, is one state which has such regulations for agricultural and forestry applications, plus a regulation for construction applications in forest-covered, brush-covered, or grass-covered lands.

Typically, such laws and regulations require spark arresting devices to be maintained in good working order and typically to be attached to the exhaust system on naturally aspirated engines (engines without a turbo-charger).

**HYDRAULIC OIL RECOMMENDATIONS**

Case TCH fluid is recommended for year round service in the hydraulic system.

The anti-wear hydraulic fluid used shall be blended from high quality paraffin stock with an anti-foamant as well as rust and oxidation inhibitors. The fluid must provide a minimum viscosity of 47 SUS at 210° F and a maximum measured viscosity of 6000 SUS at the lowest expected startup temperature.

Fluid Type	Typical Viscosity SUS			Viscosity Index	Operating Range (Typical °F)
	0°F.	100°F.	210°F.		
Anti-Wear Hydraulic Oil	7000	200	50	132	0 - 200° F
Hydraulic Transmission Oil	12,000	233	49	100 Min.	0 - 200° F
* Pydraul 312	100,000	312	51	71	50-200° F

\* Fire Resistant Fluid

**COMPONENT CAPACITIES**

COMPONENT	UNIT	CAPACITY	LUBRICANT/FLUID
Engine Crankcase	All	See Engine Specs., Page 8	See engine manual
Cooling System	All	See Engine Specs., Page 8	½ water, ½ ethylene glycol base anti-freeze
Fuel Tank	250,500,650	35 gal. (130 l)	No. 2 Diesel Fuel
	1000	50 gal. (190 l)	
Hydraulic Reservoir	250,500,650	18 gal. (68 l)	Case TCH fluid, or alternate as specified under Hydraulic Oil Recommendations
	1000	30 gal. (114 l)	
Complete Hydraulic System	All	35-50 gal. (130-190 l)*	
Master Brake Cylinder System	All	Approx. ½ gal. (1.8 l)*	Type "A" Brake Fluid - must meet or exceed SAE J 1703E Spec.
Pump Drive Transmission	250,500,650	4.5 qts. (4.25 l)	E.P. 80-90 gear lube MIL-L-2105B 80W-90
	1000	3 qts. (2.8 l)	
Drive Gearbox	All	4 qts. (3.8 l)	SAE NO. 30 OIL
Hoist Gearbox	All	4 qts. (3.8 l)	SAE NO. 30 OIL
Traverse Gearbox	All	1 qt. (.9 l)	MIL-L-2105B 85W-140

\*NOTE: Depending on height and width of unit.

**HYDRAULIC SYSTEM OPERATING PRESSURES**

UNIT	SUPERCHARGE		SERVO CONTROL		STEERING VALVE		MAIN VALVE	
	PSI	kPa	PSI	kPa	PSI	kPa	PSI	kPa
250B	150	1030	250	1720	2100	14 500	2525	17 400
	125	860	200	1380	2000	13 800	2475	17 060
500B, 650B	150	1030	250	1720	2100	14 500	2775	19 130
	125	860	200	1380	2000	13 800	2725	18 790
1000B	200	1380	250	1720	2100	14 500	2775	19 130
	185	1270	200	1380	2000	13 800	2725	18 790

NOTE: Pressure readings shown are at pressure test points with valve in unit (full rpm). Supercharge is non-adjustable on 250B, 500B and 650B Travelifts.

**TIRE PRESSURES**

UNIT	SIZE	PSI	kPa	PLY RATING
250	14:00 x 24	80	550	12
500	Std: 49 x 17	105	725	Std:24 or 26
	Opt: 16:00 x 25	125	860	Opt: 24
650				
1000	16:00 x 25	125	860	24

**ENGINE RPM SPECIFICATIONS**

UNIT	ENGINE	LOW IDLE	MAX. NO LOAD
250	D.D.3-53	800 rpm	2000 rpm
500	D.D.3-53	800 rpm	2400 rpm
650	D.D.4-53	800 rpm	2600 rpm
1000	D.D.4-71	550 rpm	2475 rpm

**MAINTENANCE SCHEDULE**

**RUN-IN (AFTER 1ST DAY OR 1ST 10 HOURS)**

Engine Oil and Filters..... Change  
Hydraulic In-Line Filters..... Replace element

**DAILY OR AFTER EVERY 10 HOURS**

Engine Crankcase..... Check oil level  
Air Cleaner..... Check dust collector  
Radiator..... Check coolant level  
Hydraulic Filters with Visual Indicators..... Check visual indicators  
Hydraulic Reservoir..... Check fluid level  
Operator's Cab..... Clean thoroughly, check controls for proper operation  
Fuel Tank..... Fill at end of shift to prevent condensation

**WEEKLY OR AFTER EVERY 50 HOURS**

Engine..... See engine manual  
Batteries..... Check electrolyte level  
Grease Fittings..... Lubricate  
Drive and Hoist Chains..... Clean and lubricate, check tension  
Hoist Wire Rope..... Clean and lubricate  
Traverse Wire Rope..... Check tension, DO NOT LUBRICATE  
Tires..... Check inflation, inspect for general condition  
Service Brake Master Cylinder..... Check fluid level

**MONTHLY OR AFTER EVERY 250 HOURS**

Engine Air Cleaner..... Clean or replace element  
Pump Drive Transmission..... Check oil level  
Hoist Gearbox..... Check oil level  
Drive Gearbox..... Check oil level  
Traverse Gearbox..... Check oil level  
Machine Structure..... Check for damage, corrosion, loose or missing fasteners, general condition

**TWO MONTHS OR AFTER EVERY 500 HOURS**

Radiator..... Clean fins  
Hydraulic In-Line Filters..... Replace elements  
Drive Brake..... Check and adjust  
Wire Rope Sheaves..... Check for wear, pinching

**SIX MONTHS OR AFTER EVERY 1500 HOURS**

Hydraulic System..... Drain and refill, clean screens  
Pump Drive Transmission..... Drain and refill  
Drive Gearbox..... Drain and refill  
Hoist Gearbox..... Drain and refill  
Traverse Gearbox..... Drain and refill

SERVICE CHART

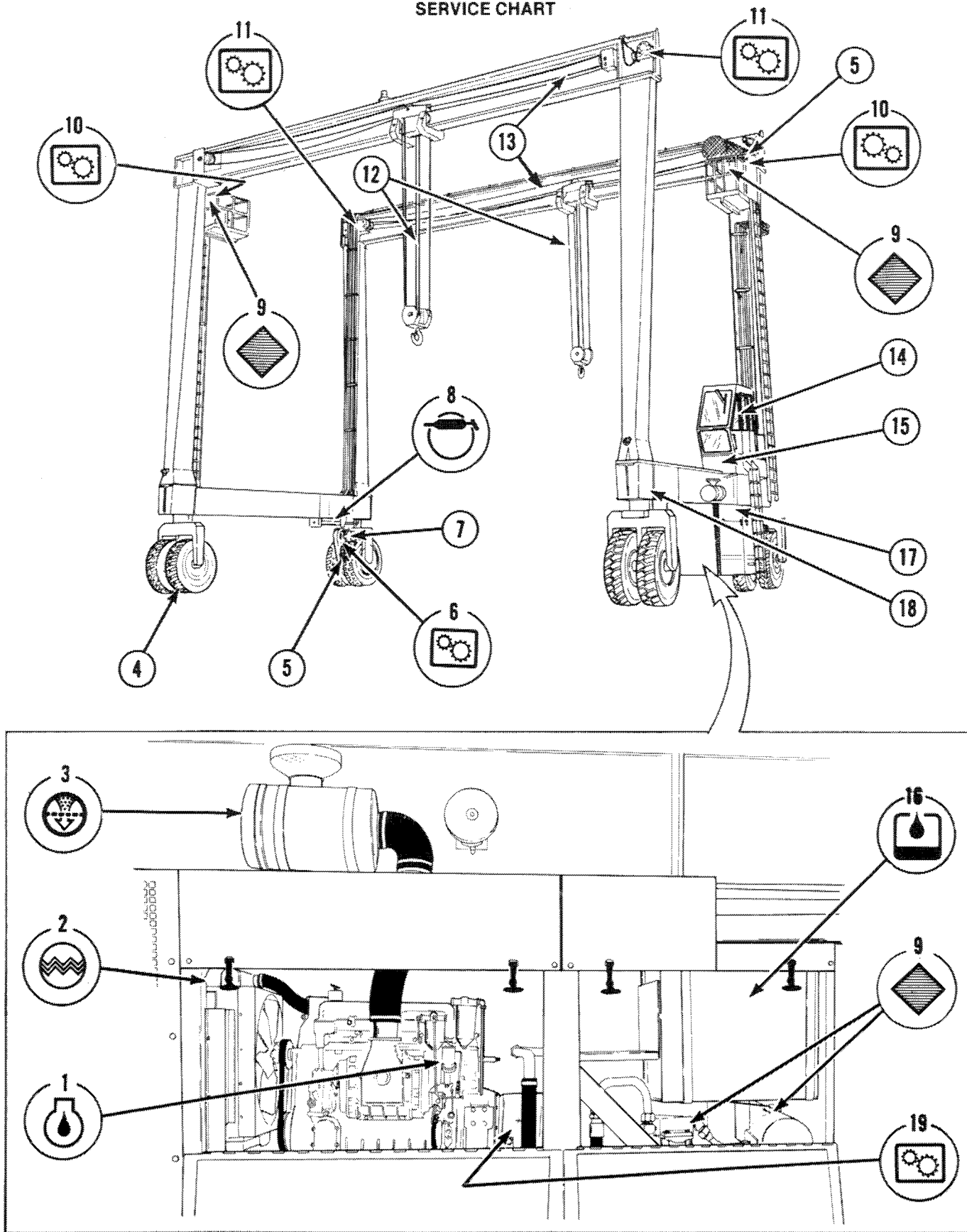


Figure 4. Service Chart

**SERVICE CHART**

1. **ENGINE** - Run-In or first 10 hours. Refer to engine manufacturer's manual for all engine maintenance and adjustments.
2. **COOLING SYSTEM** - Daily or every 10 hours check coolant level in radiator. Every 2 months or 500 hours clean radiator fins. Every 6 months or 1500 hours drain and flush cooling system.
3. **AIR CLEANER** - Daily or every 10 hours check collector. Monthly or every 250 hours remove and clean element. Replace after 5 cleanings.
4. **WHEELS AND TIRES** - Weekly or every 50 hours check inflation and general condition. Repack wheel bearings at regular intervals based on usage.
5. **HOIST AND DRIVE CHAINS** - Weekly or every 50 hours check tension, clean with non-flammable solvent and oil with SAE No. 10 motor oil. In dusty environment, clean daily but do not lubricate.
6. **DRIVE GEARBOX** - Monthly or every 250 hours check oil level. Every 6 months or 1500 hours change oil.
7. **DRIVE BRAKES** - Every 2 months, or 500 hours, (or as required) check and adjust.
8. **PRESSURE GUN FITTINGS** - Weekly or every 50 hours lubricate with Lithium Base E.P. No. 2 grease.
9. **HYDRAULIC FILTERS** - Run-In or first 10 hours - Change filters. Daily or every 10 hours check visual indicators. Every 2 months or 500 hours, or as indicated by visual indicators, replace elements.
10. **HOIST GEARBOX** - Monthly or every 250 hours check oil level. Every 6 months or 1500 hours change oil.
11. **TRAVERSE GEARBOX** - Monthly or every 250 hours check oil level. Every 6 months or 1500 hours change oil.
12. **HOIST WIRE ROPE** - Weekly or every 50 hours inspect for wear and general condition. Clean and lubricate with SAE 10 motor oil.
13. **TRAVERSE WIRE ROPE** - Weekly or every 50 hours check tension. Do not lubricate.
14. **OPERATOR'S CAB** - Daily or every 10 hours clean thoroughly. Check controls for proper operation.
15. **SERVICE BRAKE MASTER CYLINDER** - Weekly, or every 50 hours check fluid level.
16. **HYDRAULIC SYSTEM** - Daily or every 10 hours check oil level in reservoir. Every 6 months or 1500 hours drain and refill system, clean reservoir breather and outlet screen.
17. **BATTERY** - Weekly or every 10 hours check electrolyte level. Every 6 months or 1500 hours clean battery posts and connections.
18. **MACHINE STRUCTURE** - Monthly or every 250 hours inspect for damage, corrosion, loose bolts and clamps.
19. **PUMP DRIVE TRANSMISSION** - Monthly or every 250 hours, check oil level. Every 6 months or 1500 hours drain and refill.

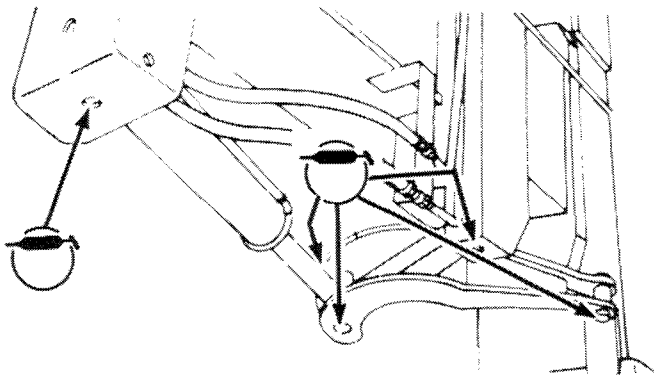


**PICTORIAL LISTING OF GREASE FITTINGS**

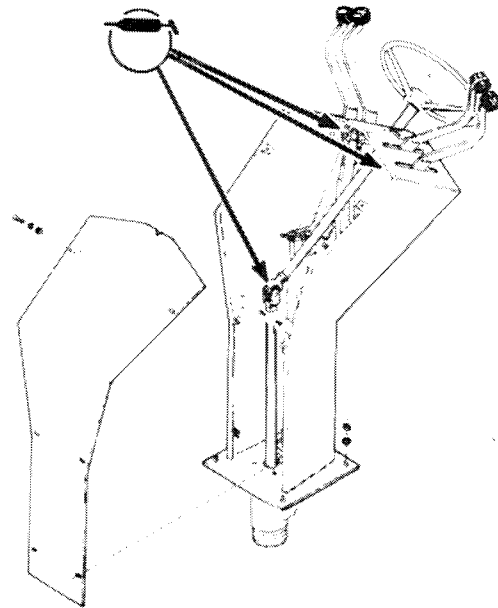
LIST OF LUBRICATION FITTINGS			
FIG. NO.	LOCATION/TITLE	QTY.	INTERVAL
5A	Steering Cylinder and Linkage	5/side	Weekly/50 Hours
5B	Control Levers and U-joint in Steering Console	5	Weekly/50 Hours
5C	Linkage Bellcranks and Control Levers in Instrument Panel and below Cab	6	Weekly/50 Hours
5D	Pump Stroking Linkage Bellcrank	2	Weekly/50 Hours
5E	Pump Drive Shaft (front of engine- 250,500,650 Travelifts only)	2	Weekly/50 Hours
5F	Pillow Blocks on Hoist Drums	2/hoist	Weekly/50 Hours
5G	Warning Horn Linkage Bellcrank	1	Monthly/250 Hours
5H	Wheel Pillow Blocks - 250, 500	4	Monthly/250 Hours

**ILLUSTRATED LUBRICATION CHART**

Refer to LIST OF LUBRICATION FITTINGS and PICTORIAL LISTING ON THE FOLLOWING PAGES. Use lithium base EP No. 2 grease. If fitting will not accept the grease, remove fitting, clean out the obstruction, then reinstall the fitting. Fittings are to be greased according to intervals listed

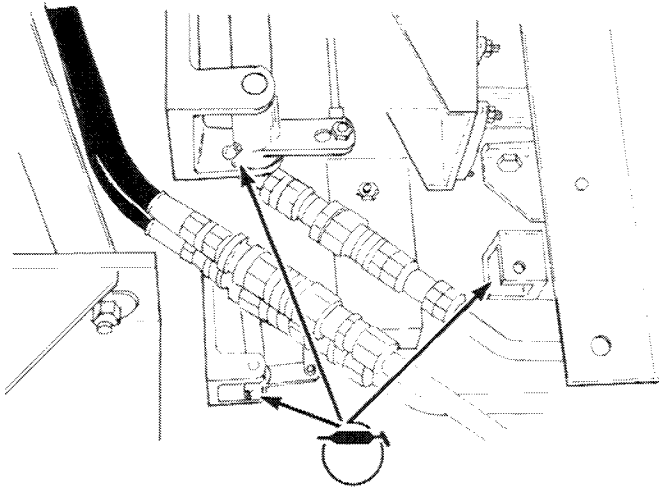


**Figure 5A. Steering Cylinder and Steering Linkage (on end of pivot pins)**

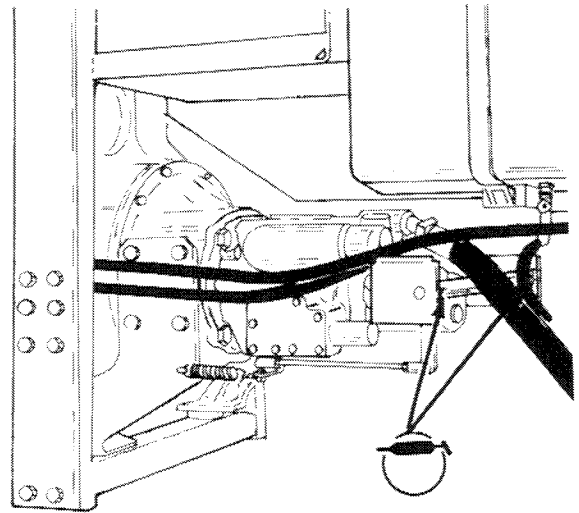


**Figure 5B. Control Levers and U-joint in Steering Console**

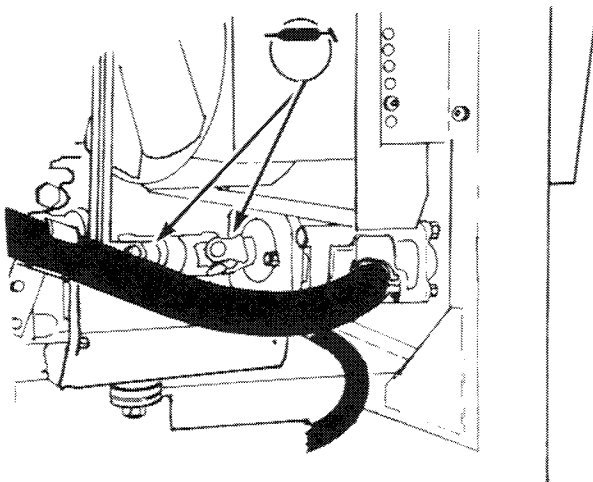
**PICTORIAL LISTING OF GREASE FITTINGS (CON'T)**



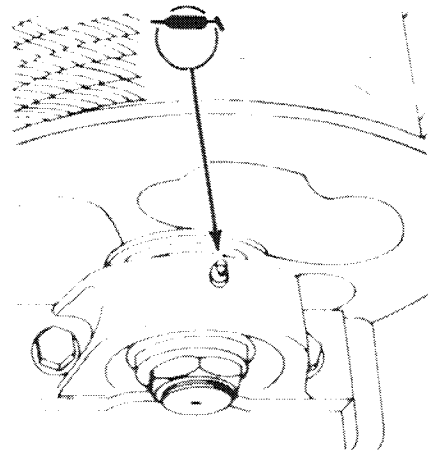
**Figure 5C. Linkage Bell Cranks below Cab**



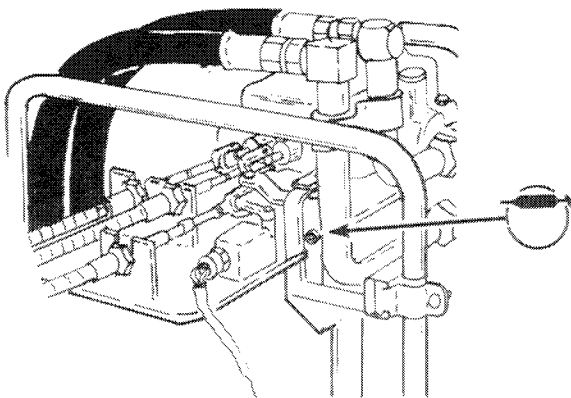
**Figure 5D. Pump Stroking Linkage Bellcrank**



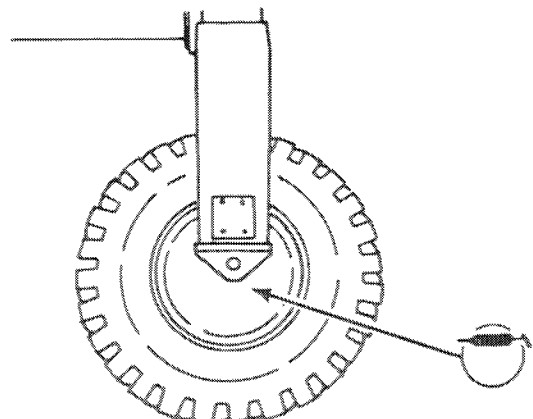
**Figure 5E. Pump Drive Shaft (front)-  
(250,500,650 only)**



**Figure 5F. Hoist Drum and Pillow Blocks  
(250B and 1000B only)**



**Horn Linkage Bellcrank**



**Figure 5H. Wheel Pillow Blocks  
(250B and 500B only)**

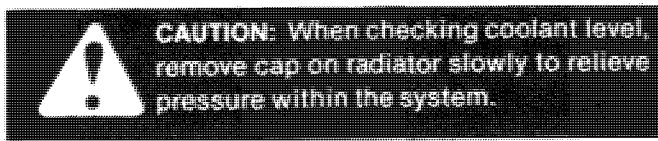
**ITEMIZED INSTRUCTIONS**

**1. ENGINE**

Refer to the engine manual for manufacturer's recommendations concerning maintenance intervals, lubricants and fuels.

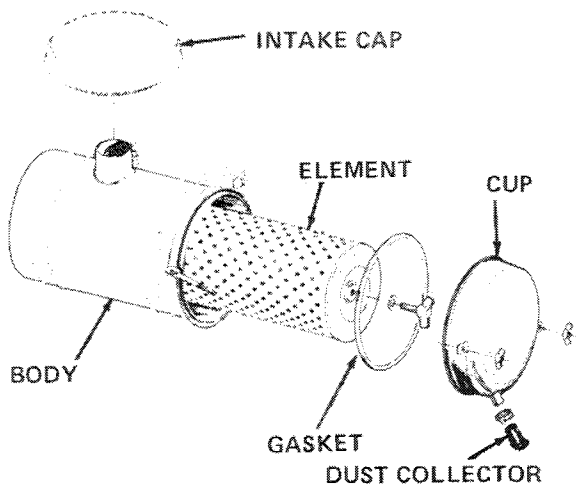
**2. COOLING SYSTEM**

Check coolant level daily. Refer to page 26 for coolant recommendations and system maintenance.



**3. AIR CLEANER**

Dust is normally ejected from the dust collector by vibration during operation. If the rubber tube plugs up, dust will accumulate in the air cleaner. Check dust collector daily to assure that it is functioning properly. Monthly or after every 250 hours of operation, whichever occurs first, remove and clean the air cleaner element. In extremely dusty area, clean more often. Replace element and gasket after every fifth cleaning. Before removing element, clean area around air cleaner thoroughly to prevent dirt from getting into intake section of cleaner when element is removed.



**Figure 6. Air Cleaner (typical)**

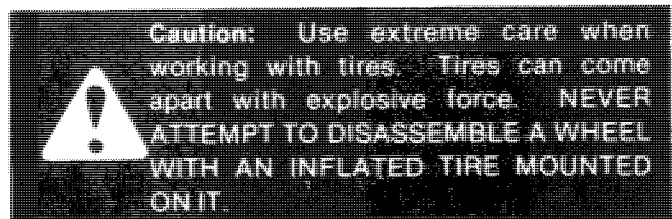
Clean element with warm water and a non-sudsing detergent. DO NOT use hot water as this will damage element. Allow element to AIR DRY. Wipe out inside of Air Cleaner with a damp cloth. Do not use fuel oil, gasoline, or other solvents. Do not attempt to dry element with compressed air.

After cleaning, hold a lighted bulb inside the element and INSPECT for holes or ruptures which will show up as bright spots. Replace element if it appears damaged in any way.

When replacing element, also replace gasket if necessary. Remove Dust Cap and clean with compressed air or warm water and a non-sudsing detergent.

**4. WHEELS AND TIRES**

Keep tires properly inflated at all times. Inspect them periodically for cuts, cracks, or other damage that might lead to tire failure. Replace tires immediately if defects or excessive wear is noted.



Repack the bearings at regular intervals based on general operating conditions. To reach the bearings, it will be necessary to remove the wheels from yoke (see page 112).

**5. HOIST AND DRIVE CHAINS**

Caked lubricants, trapped dirt and grit must be removed periodically to assure maximum sprocket and chain life. Cleaning frequency will depend on service conditions.

Clean Chains on sprockets as follows:

1. Remove guard.
2. Brush or swab chain liberally with nonflammable solvent. Allow solvent to drain off and evaporate. If available, steam clean chains and sprockets.
3. Check chains and sprockets for signs of wear and corrosion.

- Apply SAE 10 oil with swab, brush or oil can. Allow excess oil to drain off before using machine.

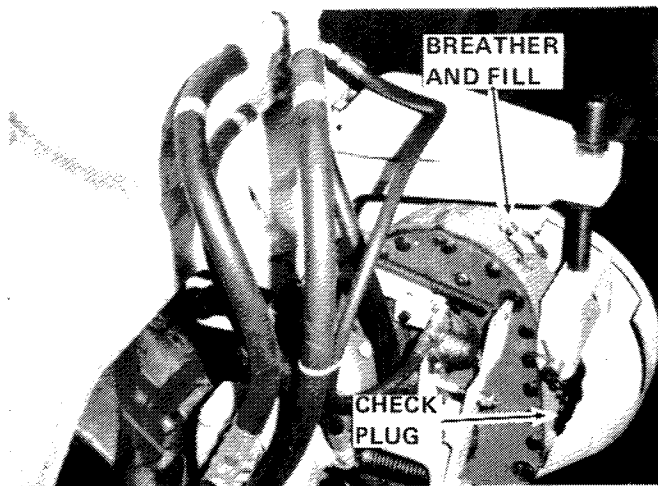
**NOTE:** Heavy oil applied to outside of chain will not reach working parts and will only catch grit when operating under dusty conditions.

To ensure proper operation and maximum wear life, the drive chain must be correctly aligned, must have proper tension and must be lubricated at regular intervals. For chain tension adjustment, see page 32.

**6. DRIVE GEARBOXES**

The drive gearboxes are mounted on the rear steering yokes. Fill, check and drain locations are shown in Figures 7 and 8. Check oil level in gearboxes every 250 hours, or every month, whichever occurs first. Replenish with SAE No. 30 motor oil as required.

Drain and refill gearboxes every 1500 hours or six months, whichever occurs first. Check for metal particles or discolored oil which would indicate a need for service.



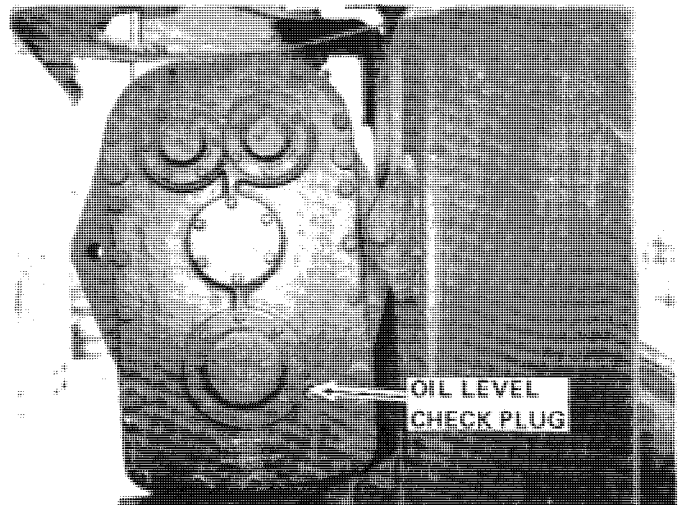
**Figure 7. Drive Gearbox (250 model)**

**7. DRIVE BRAKES**

Refer to page 30 for brake adjustments.

**8. PRESSURE GUN FITTINGS**

Lubricate all fittings in accordance with intervals specified in the Pictorial Listing.



**Figure 8. Drive Gearbox (1000 model-typical of 500 and 650 models)**

**9. HYDRAULIC FILTERS (In-Line)**

The filtration system on the 250, 500 and 650 models is identical. The 1000 model is equipped with additional filters due to its larger capacity system. Filter locations are listed in the Filter Location Chart and shown in the corresponding pictures. Filters with visual indicators should be checked daily. Every 2 months or 500 hours, replace all in-line filters. See **DISASSEMBLY AND REPAIR** section for filter disassembly instructions.

**IN-LINE FILTER LOCATION CHART**

UNIT	FILTER	QTY	LOCATION	FIG
250, 500, 650	FAIREY	2	High Pressure Lines from Main Pumps to Main Control Valves	9A
	CASE	1	High Pressure Line from Power Steering Pump	9A
	DONALDSON	1	Return Line from Main Control Valves	9B
1000	FAIREY	2	High Pressure Lines from Main Pumps to Main Control Valves	9C
		4	Front and Rear Hoist Circuits	9D
	CASE	3	Power Steering and Drain Circuits	9E
	SCHROEDER	1	Supercharge Circuit	9F
		1	Manifold Return Line	9G

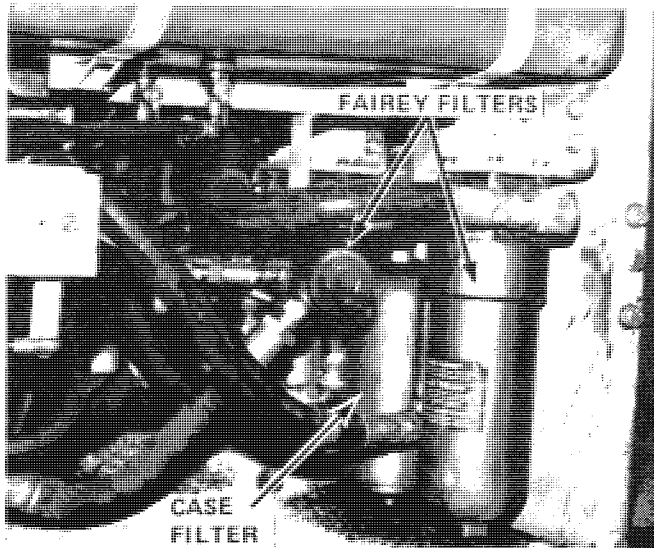


Figure 9A. High Pressure Filters (250,500,650)

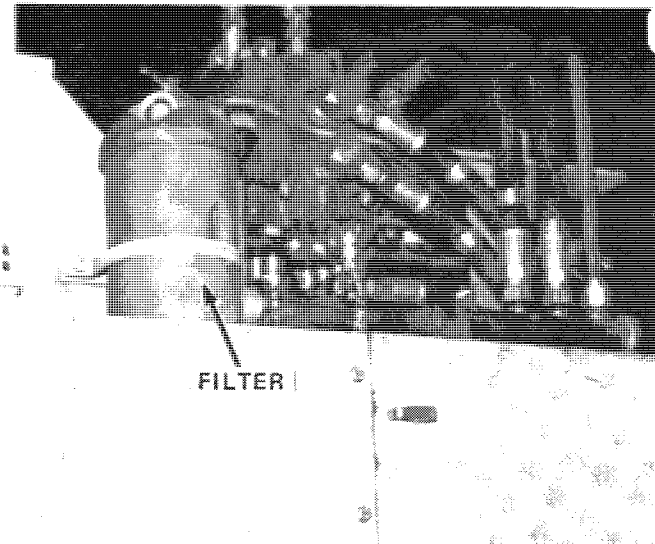


Figure 9B. Return Line Filter (250, 500, 650)

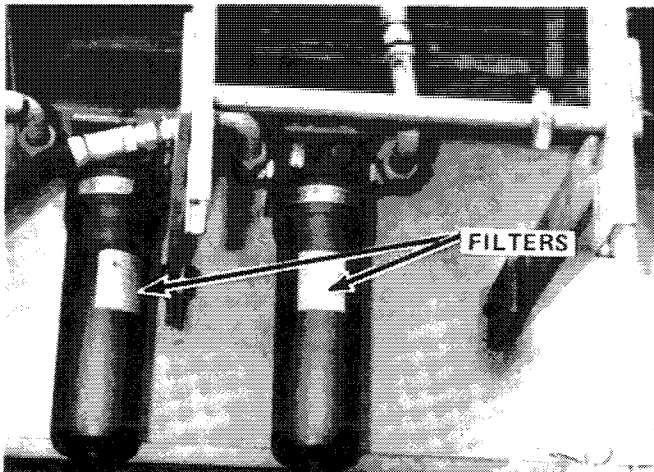


Figure 9C. High Pressure Filters - Main System (1000)

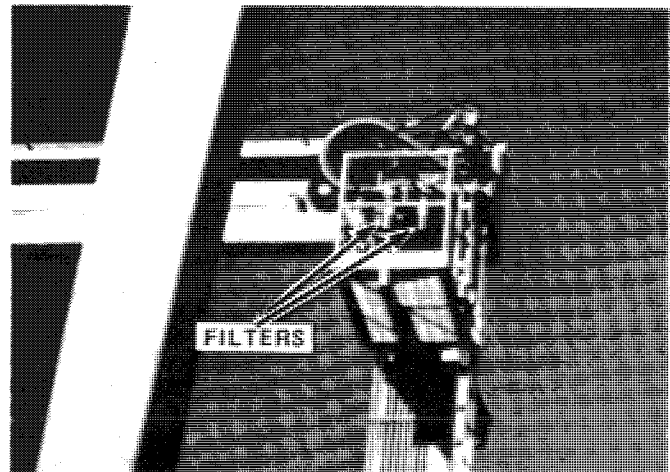


Figure 9D. High Pressure Filters - Hoist (1000)

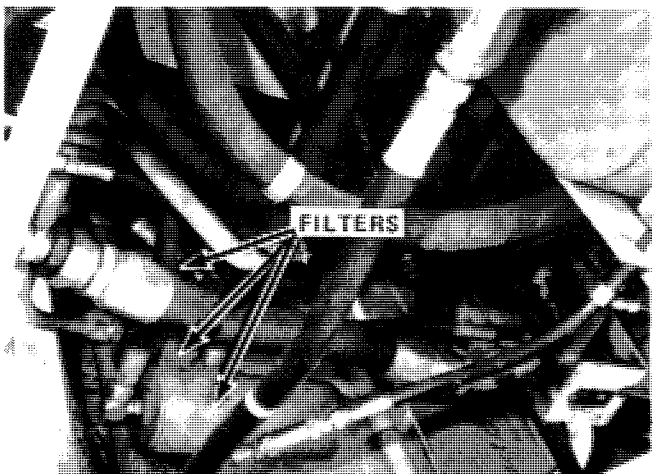


Figure 9E. Location of Case Filters (1000)

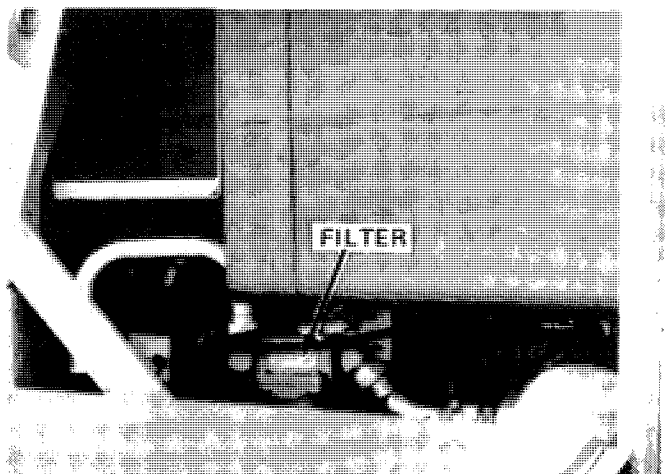
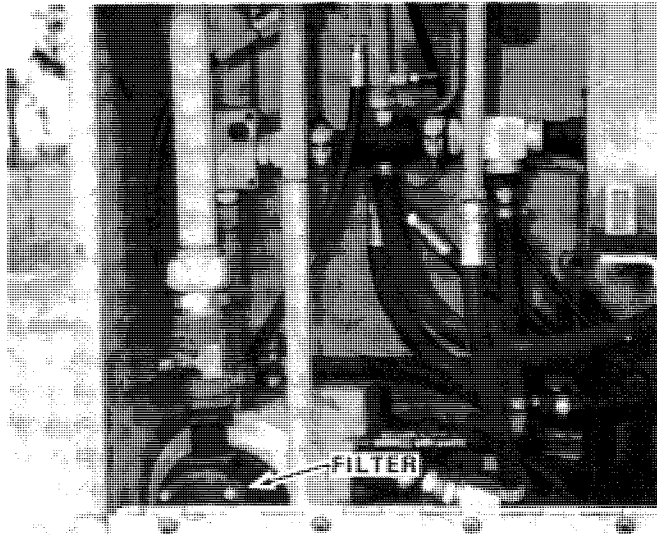


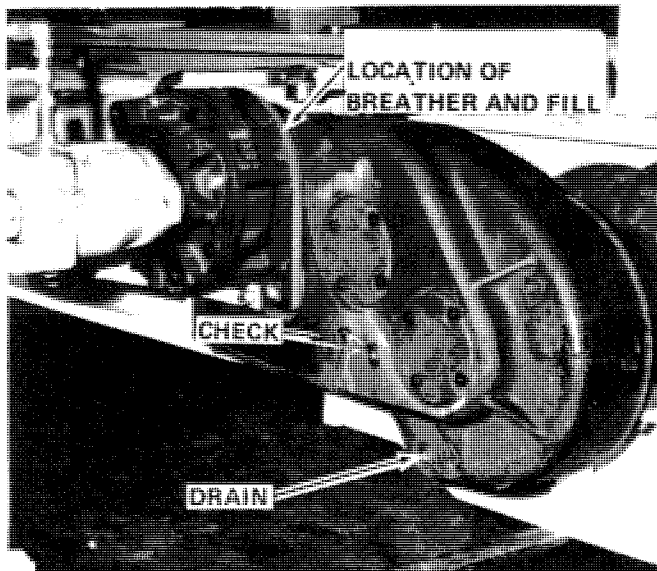
Figure 9F. Schroeder Filter in Supercharge Circuit (1000)



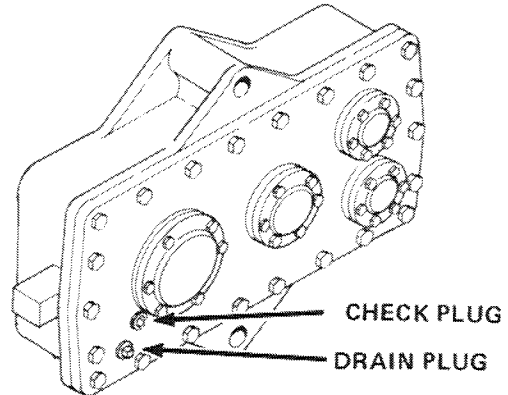
**Figure 9G. Filter Located in Manifold (1000)**

**10. HOIST GEARBOXES**

Check oil level monthly or every 250 hours. Fill, check and drain locations are shown in Figures 10 and 11. Replenish with SAE No. 30 motor oil as required. Drain and refill the gearboxes every 6 months or 1500 hours, whichever occurs first. Check drain oil for metal particles or discoloration which indicate the need for further service.



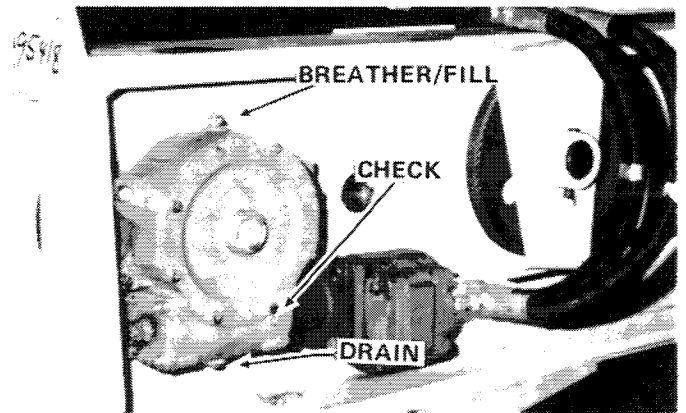
**Figure 10. Hoist Gearbox (250 Installation)**



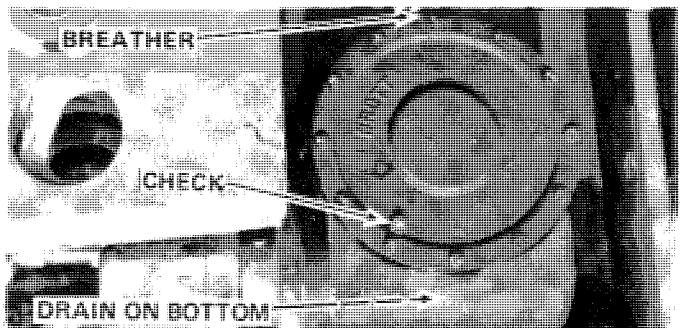
**Figure 11. Hoist Gearbox (650 Installation-typical of 500 and 1000 models)**

**11. TRAVERSE GEARBOXES**

Check oil level monthly or every 250 hours, whichever occurs first. Fill, check and drain locations are shown in Figures 12 and 13. Replenish with SAE No. 140 worm gear oil as required. Drain and refill the gearboxes every 6 months or 1500 hours. Check the drain oil for metal particles or discoloration which indicate the need for further service.



**Figure 12. Traverse Gearbox (250 Installation)**



**Figure 13. Travers Gearbox (1000 Installation - typical of 500 and 650 models)**