# 485E, 486E, 488E Forklifts

## OPERATOR'S MANUAL
## 485E,486E,488E Forklifts

**OMT188200 Issue E1 (ENGLISH)**

CALIFORNIA
Proposition 65 Warning

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

If this product contains a gasoline engine:

**⚠ WARNING**

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

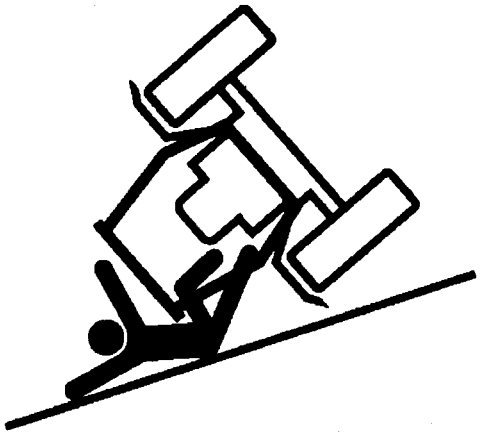
The State of California requires the above two warnings.

**Worldwide Construction And Forestry Division**
**(Replaces OMT165270 J8)**
U.S.A.

**Avoid Injury From Rollover Accidents----------**
**Wear Your Seat Belt----------**
**Do Not Attempt to Jump Clear of Tipping Machine—Serious or Fatal Crushing Injuries Will Result----------**
**Machine Will Tip Over Faster Than You Can Jump Free**

To avoid rollovers:

- Be careful when operating on a slope.
- Avoid sharp turns.
- Balance loads so weight is evenly distributed and load is stable.
- Keep tools close to ground to aid visibility and lower center of gravity.
- Reduce speed before turning or swinging load.
- Know capacity of machine. Do not overload.
- Be careful when operating at the edge of an excavation, trench, drop-off, or trailer when loading or unloading.
- Read and understand the operating instructions in this operator's manual.



USE SEAT BELT

T7242EA –19–22FEB90

TX,05,BD2026 –19–07OCT96–1/1

## Warn Others of Service Work

Unexpected machine movement can cause serious injury.

Before performing any work on the machine, attach a "DO NOT OPERATE" tag to the steering wheel.


T7447AO –19–22APR91

TX,05,DH1820 –19–14MAY91–1/1

## Practice Safe Maintenance

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

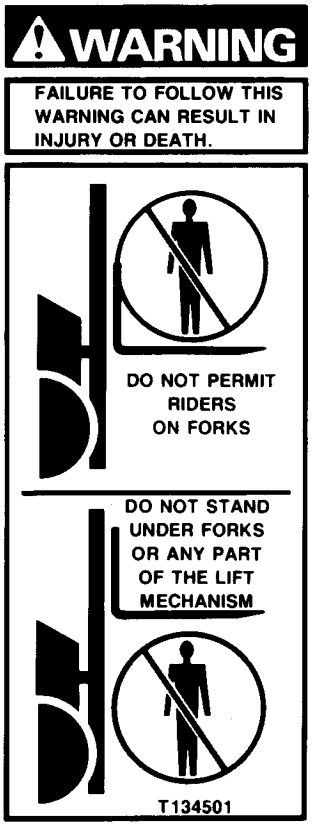
Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

Disconnect battery ground cable (—) before making adjustments on electrical systems or welding on machine.

TS218 –UN–23AUG88

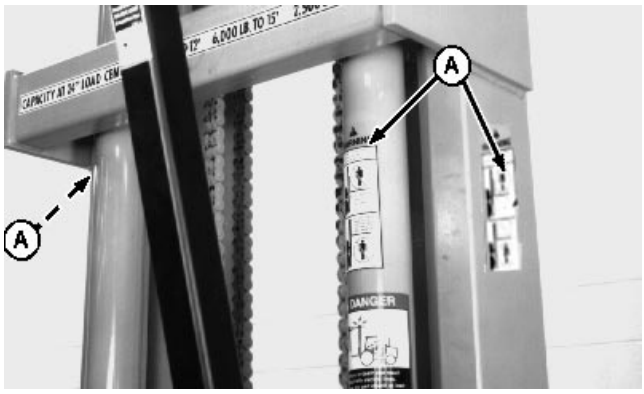
TX,05,BG821 –19–10MAR97–1/1

## Safety Sign




*A—Safety Decal—Three Locations*

T7720BV –19–10APR92

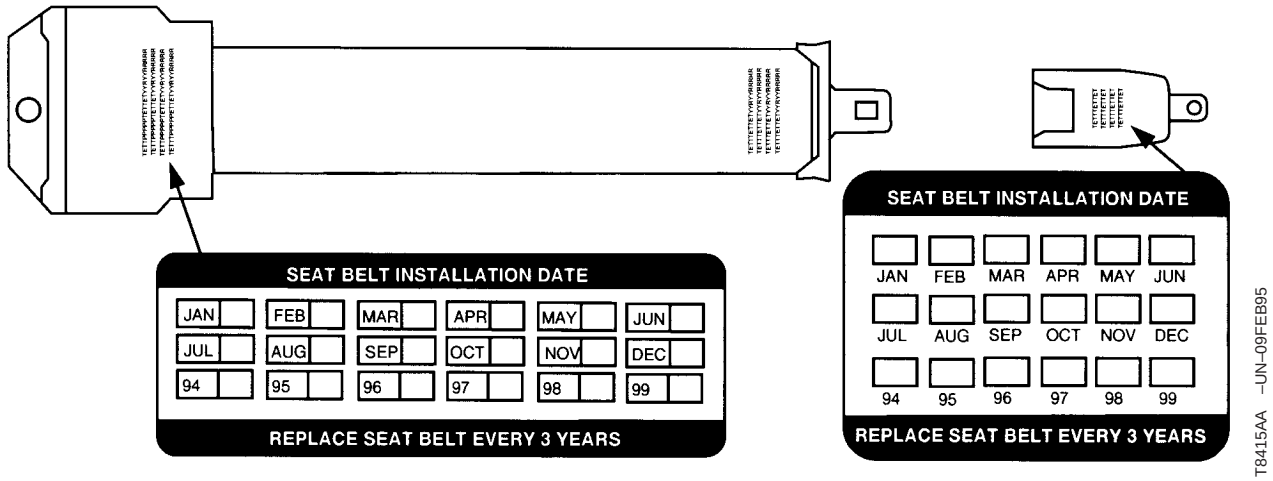



*Right Side Shown*

T107315 –UN–17MAR97

TX,06,BG822 –19–10MAR97–1/1

## Seat Belt—Maintenance




Seat belt and mounting hardware must be inspected for wear or damage before operating the machine. Replace the belt or mounting hardware if worn or damaged.

Replace the complete seat belt assembly every three years regardless of appearance. A date label, to determine the age of the belt, is attached to each belt.

TX,10,BG596 –19–22JAN97–1/1

## Seat Controls—Suspension

**CAUTION: Be sure seat is locked in position before operating machine. A seat which is loose or not properly locked can cause loss of control of machine and injuries or death.**

FORWARD-REARWARD CONTROL: Lift fore-aft lever (A), slide seat to desired position and release lever.

BACKREST ANGLE ADJUSTMENT: Use lever (B) to adjust position of backrest.

WEIGHT ADJUSTMENT CONTROL: With NO weight on seat, turn adjustment knob (C) to change seat height and ride stiffness.

**A—Fore-Aft Lever**
**B—Backrest Angle Adjuster**
**C—Weight Adjuster**


TX,10,BG834 –19–10MAR97–1/1

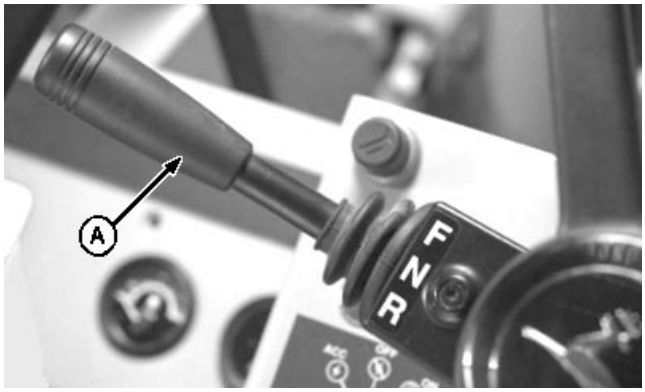
## Stopping the Engine—Normal Shutdown

**IMPORTANT: Before stopping engine that has been operating at working load, idle at 1/3 speed for one to two minutes to cool hot parts. If engine stalls while operating under load, restart immediately and idle at 1/3 speed for one to two minutes before stopping to allow coolant to continue circulating through engine.**

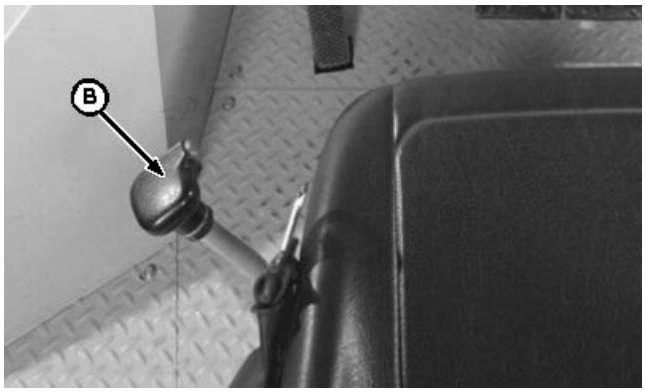
1. Park machine on a level surface.
2. Lower all equipment to ground.
3. Move FNR lever (A) and gear shifter (B) to neutral position.

**CAUTION: Prevent possible injury from unexpected machine movement. NEVER rely on FNR lever alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park brake to hold machine.**

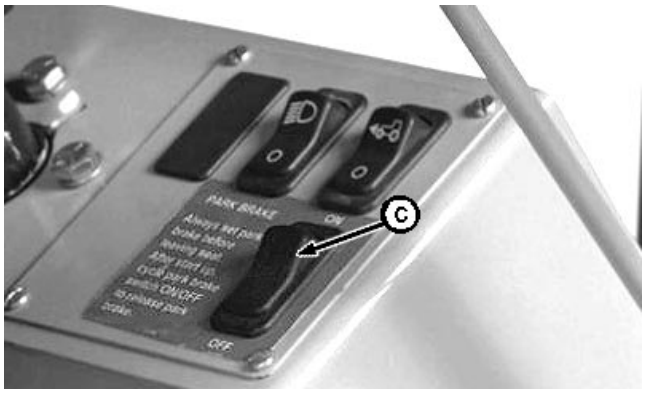
4. Move park brake switch (C) to engaged position.
5. Run engine at 1/3 speed with no load for one to two minutes.
6. Turn key off to stop engine. Remove key.
7. Release hydraulic pressure by moving control lever(s) until equipment does not move.



T107345 –UN–14FEB97



T107366 –UN–14FEB97



T107367 –UN–14FEB97

TX,25,BG845 –19–11MAR97–1/1

## Operating Four Wheel Drive—If Equipped

**IMPORTANT: Prevent possible gear damage. Four wheel drive can be engaged and disengaged while driving, except in cases of unequal traction. Machine must be stopped before engaging four wheel drive during unequal traction.**

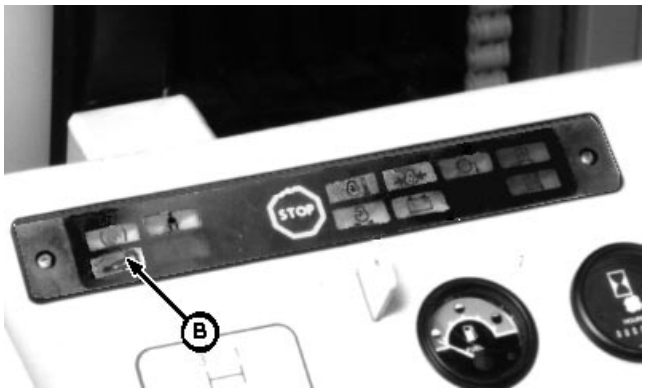
*NOTE: For best performance, fuel economy, and tire wear, operate four wheel drive only when needed.*

*To achieve best performance, be sure front tires are inflated to proper air pressure. (See Tire Inflation Pressures in Maintenance—As Required chapter.)*

*NOTE: It may take several seconds for the four wheel drive to engage or disengage depending on the mechanical gearing of the four wheel drive assembly.*

Push top of switch (A) to engage four wheel drive. Indicator light (B) will remain on while four wheel drive is engaged.


T107459 –UN–17FEB97




T108127 –UN–12MAR97

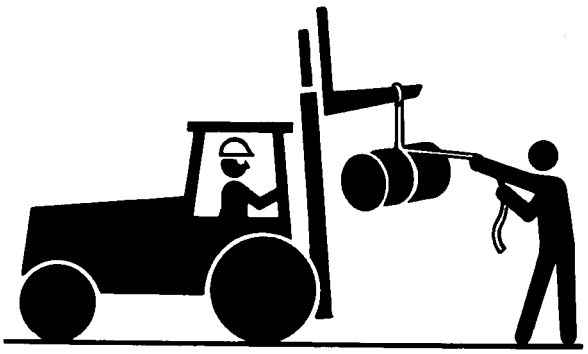
TX,35,BG854 –19–11MAR97–1/1

## Suspended Loads

Avoid sudden starts, stops, and turns when carrying a suspended load.

Do not drag loads.

Do not permit suspended loads to swing freely. Tether load to restrict movement.



T7305AJ –UN–30MAY90

TX,35,BG865 –19–11MAR97–1/1

## Lubricant Storage

Your equipment can operate at top efficiency only when clean lubricants are used.

Use clean containers to handle all lubricants.

Whenever possible, store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

Make certain that all containers are properly marked to identify their contents.

Properly dispose of all old containers and any residual lubricant they may contain.

DX,LUBST –19–18MAR96–1/1

## Mixing of Lubricants

In general, avoid mixing different brands or types of oil. Oil manufacturers blend additives in their oils to meet certain specifications and performance requirements.

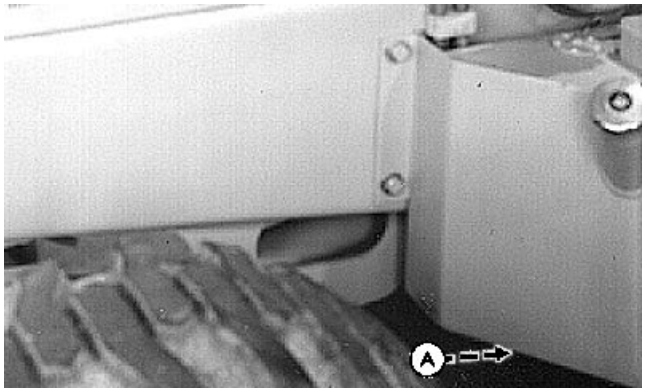
Mixing different oils can interfere with the proper functioning of these additives and degrade lubricant performance.

Consult your John Deere dealer to obtain specific information and recommendations.

DX,LUBMIX –19–18MAR96–1/1

## Drain Fuel Tank Water and Sediment

1. Loosen plug (A) on bottom of fuel tank until fuel flows for several seconds, to remove water and sediment.
2. Tighten plug.




TX,55,BG487 –19–25APR01–1/1

## Check Tire Pressure

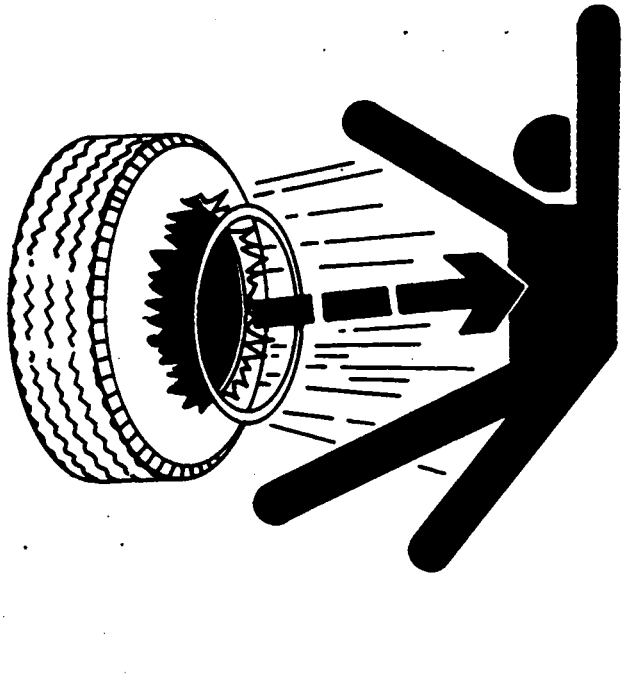
**CAUTION: Explosive separation of a tire and rim parts can cause serious injury or death.**

**Only attempt to mount a tire if you have the proper equipment and experience to perform the job. Have it done by your John Deere dealer or a qualified repair service.**

**Always maintain the correct tire pressure. DO NOT inflate the tires above the recommended pressure. NEVER cut or weld on an inflated tire or rim assembly, rim, or rim parts. Heat from welding could cause an increase in pressure and may result in a tire explosion.**

**When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.**

**Inspect tires and wheels daily. DO NOT operate with low pressure, cuts, bubbles, damaged rims, or missing lug bolts and nuts.**




Check tire pressure with an accurate gauge having 6.9 kPa (0.07 bar) (1 psi) graduations. If tires contain liquid ballast, use a special air-water gauge and measure with valve stem at bottom.

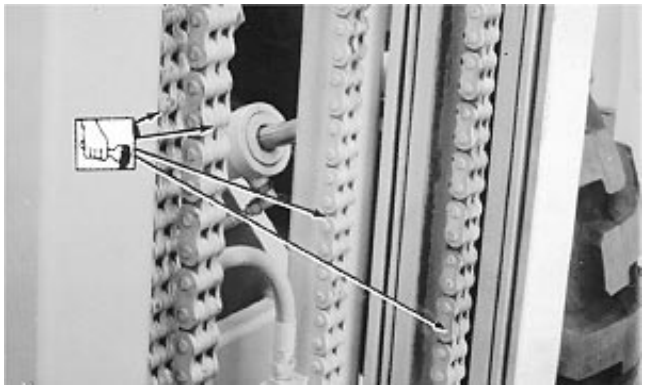
When inflating tires be sure to lock air chuck to valve stem and stand to front or rear of tire. (See Tire Inflation Pressures in this chapter or in the Specifications chapter.)

TX,55,BG598 –19–22JAN97–1/1

## Lubricate Carriage Chain

**CAUTION: Prevent possible injury from falling forks. Lower forks to the ground before servicing chain.**

1. Lower forks to the ground.
2. Clean chains using a stiff brush and a petroleum solvent. Never use steam or degreasing agents.
3. Lubricate chains using SAE 40 non-detergent engine oil.



T7744AM –UN–08APR92

TX,65,BG891 –19–11MAR97–1/1

## Lubricate Mast Channel

**CAUTION: Prevent possible injury from falling mast. Place shop stands under carriage or connect mast to a hoist before servicing mast channel.**

1. Raise mast as far as it will go. Put shop stands under carriage or connect mast to a hoist.
2. Clean channels using a stiff brush and a petroleum solvent. Never use steam or degreasing agents.
3. Lubricate each channel with grease. (See Grease in Fuels and Lubricants chapter.)

T7744AN –UN–08APR92

TX,65,BG888 –19–11MAR97–1/1

## Replace Fuel Filter

*NOTE: Dispose of waste properly.*

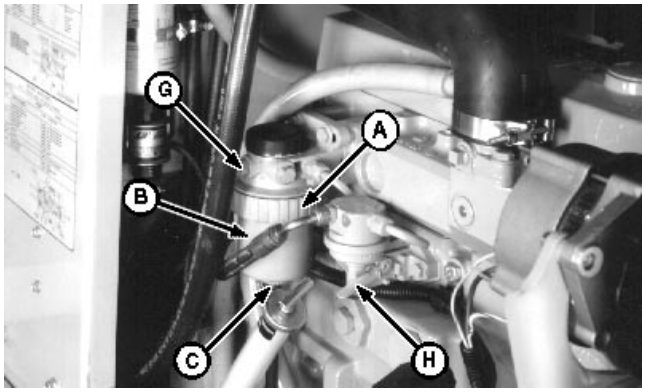
1. Turn retaining ring (A) counterclockwise and remove filter element (B). Allow sediment to drain into a container.
2. Remove fuel drain knob (C) from filter element and install to new filter.
3. Clean filter base (D).

*NOTE: Do not attempt to turn filter element into base.*

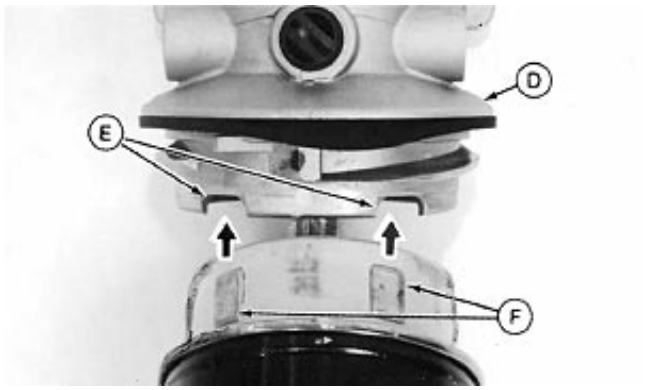
4. Install new fuel element by aligning vertical locators (F) into slots (E) on filter base. Push filter element up firmly until filter snaps against base.
5. Turn retaining ring clockwise into filter base until retaining ring clicks tightly into place.
6. Loosen bleed screw (G) by turning knob counterclockwise.
7. Operate primer lever (H) until fuel flow from bleed screw is free of air bubbles.

*NOTE: If there is no fuel flow, push primer lever toward engine and turn crankshaft using starter motor to reposition camshaft. Repeat step 6.*

8. Tighten bleed screw.
9. Push primer lever toward engine as far as possible.




T107894 –UN–06MAR97




T7896AJ –UN–25NOV92

**A—Retaining Ring**
**B—Filter**
**C—Drain Knob**
**D—Filter Base**
**E—Slots**
**F—Vertical Locators**
**G—Bleed Screw**
**H—Primer Lever**

TX,80,BG902 –19–11MAR97–1/1

## Change MFWD Steer Axle Housing Oil—If Equipped

*NOTE: Dispose of drain oil properly.*

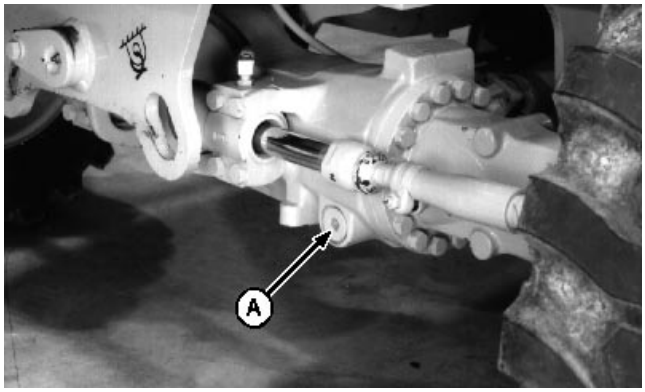
1. Remove plug (A) to drain oil.
2. Install plug.
3. Remove plug (B) and add oil so it is level with bottom of filler hole. (See Fuels and Lubricants chapter for proper type of oil.)

**Specification**

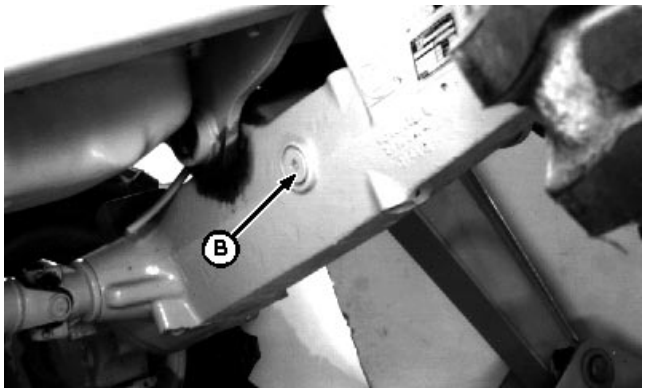
MFWD Front Axle—Capacity
(SN—851673)..... 13 L (3.5 gal) Approximate
—Capacity (SN 851674—)..... 16 L (4 gal) Approximate

4. Install plug.

**A—MFWD Drain Plug**
**B—MFWD Filler Hole**




T106417 –UN–14JAN97

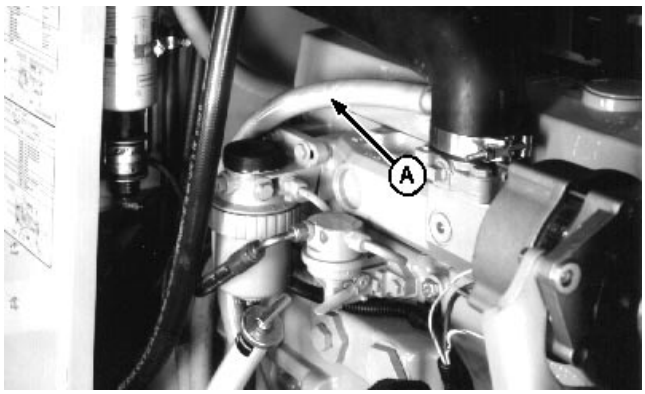



T106418 –UN–14JAN97

TX03768,0000B80 –19–14MAY01–1/1

## Clean Engine Crankcase Vent Tube

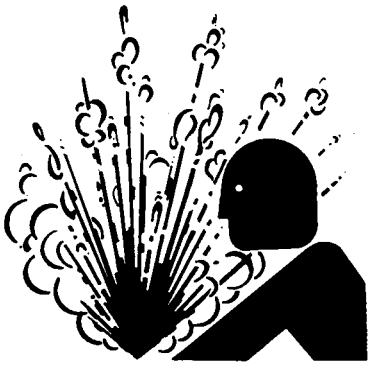
Remove vent tube (A) and clean interior using diesel fuel.




T107912 –UN–07MAR97

TX,85,BG915 –19–11MAR97–1/1

## Filling the Cooling System



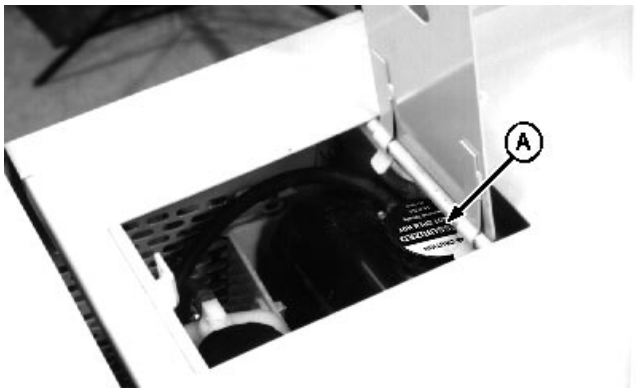
TS281 –UN–23AUG88

**CAUTION: Prevent possible injury from hot spraying water. DO NOT remove radiator cap unless the engine is cool. Then turn cap slowly to the stop. Release all pressure before removing cap.**

Remove radiator cap (A). Coolant level must be at bottom of filler neck.

**Specification**

Cooling System—Capacity..... 14.8 L (3.9 gal)




T107308 –UN–13FEB97

**IMPORTANT: Use only permanent-type low silicate, ethylene glycol base antifreeze in coolant solution. Other types of antifreeze may damage cylinder seals.**

*NOTE: All machines are shipped from the factory with a 50-50 mixture for protection to —34°C (—30°F). Adjust mixture accordingly to provide freeze protection for your machine.*

FREEZING TEMPERATURES: Fill with permanent-type low silicate, ethylene glycol antifreeze (without stop-leak additive) and clean, soft water. Add John Deere Coolant Conditioner or equivalent.

TX,90,BG921 –19–11MAR97–1/1

## Do Not Service Injection Nozzles

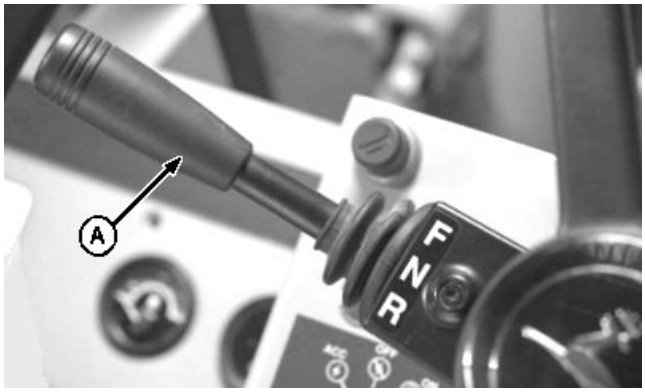
**IMPORTANT: Do not service or remove injection nozzles. The service life of the injection nozzles may be shortened by:**

- **Overheating**
- **Improper operation**
- **Poor quality fuel**
- **Excessive idling**

If injection nozzles are not working correctly or are dirty, the engine will not run normally. (See your authorized dealer for service.)

TX,90,DH1583 –19–10DEC92–1/1

## Checking Neutral Start System




T107345 –UN–14FEB97

**CAUTION: Avoid possible injury or death. DO NOT attempt to start machine unless you are sitting in operator's seat with the clutch switch depressed. DO NOT bypass or disable any of the starting system parts.**

**Set park brake before attempting to start engine.**

This machine has a neutral start switch that is activated by the FNR lever (A).

Set park brake and place gear shifter in neutral.

Check the neutral start system to ensure that the machine:

- WILL start with the FNR lever in neutral "N" position.
- WILL NOT start with FNR lever in any other position.

If starting system fails to operate correctly, have your authorized dealer repair the system immediately.

TX,90,BG922 –19–11MAR97–1/1

## Adding Attachments/Accessories to Overhead Guard

Do not add attachments or accessories to the overhead guard without contacting your authorized dealer for information. Improper attachment may impair the protection offered by the overhead guard.

TX,90,BG960 –19–19MAR97–1/1

## Checking Wheel Fasteners

Tighten wheel cap screws and fasteners.

| Rear axle: | N•m | (lb-ft) |
|---|---|---|
| Standard axle | 136 + 20 — 68 | (100 +15 — 50) |
| Four wheel drive axle | 300 +110 — 40 | (221 +81 — 29) |

| Front axle: | N•m | (lb-ft) |
|---|---|---|
| Standard axle | 495 ± 99 | (365 ± 73) |

T6000AU –UN–18OCT88

T87507 –UN–21OCT88

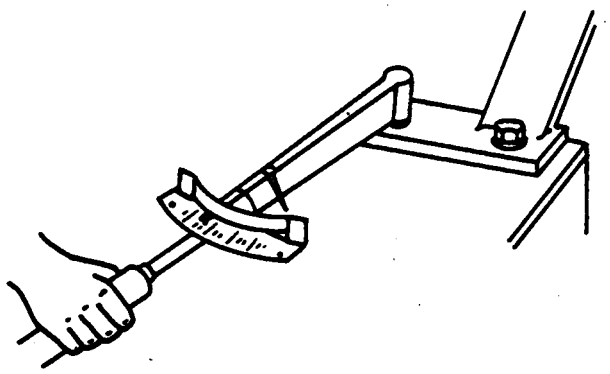
TX,90,BG940 –19–12MAR97–1/1

## Keep Overhead Guard Installed Properly

**CAUTION: Make certain all parts are reinstalled correctly if the rollover protective structure overhead guard is loosened or removed for any reason. Tighten mounting bolts to proper torque.**

**The protection offered by overhead guard will be impaired if overhead guard is subjected to structural damage, is involved in an overturn incident, or is in any way altered. A damaged overhead guard should be replaced, not reused.**

When installation of equipment on a machine necessitates loosening or removing overhead guard, be certain that all attaching hardware is properly replaced and torqued to specifications. Replace locking nuts with new parts.



TS176 –UN–23AUG88

TX,90,BG962 –19–19MAR97–1/1

| TORQUE CHART * | | | | | |
|---|---|---|---|---|---|
| | | N•m | | lb-ft | |
| Nominal Flange Size | Cap Screw Size | Min | Max | Min | Max |
| 1/2 | 5/16-18 UNC | 20 | 31 | 15 | 23 |
| 3/4 | 3/8-16 UNC | 28 | 54 | 21 | 40 |
| 1 | 3/8-16 UNC | 37 | 54 | 27 | 40 |
| 1-1/4 | 7/16-14 UNC | 47 | 85 | 35 | 63 |
| 1-1/2 | 1/2-13 UNC | 62 | 131 | 46 | 97 |
| 2 | 1/2-13 UNC | 73 | 131 | 54 | 97 |
| 2-1/2 | 1/2-13 UNC | 107 | 131 | 79 | 97 |
| 3 | 5/8-11 UNC | 158 | 264 | 117 | 195 |
| 3-1/2 | 5/8-11 UNC | 158 | 264 | 117 | 195 |
| 4 | 5/8-11 UNC | 158 | 264 | 117 | 195 |
| 5 | 5/8-11 UNC | 158 | 264 | 117 | 195 |

*****Tolerance ±10%. The torques given are enough for the given size connection with the recommended working pressure. Torques can be increased to the maximum shown for each cap screw size if desired. Increasing cap screw torque beyond this maximum will result in flange and cap screw bending and connection failures.

04T,90,K174 –19–01AUG94–2/2

| | | |
|---|---|---|
| **Four Wheel Drive Gear and Pinion Check** | Drive machine at transport speed with four wheel drive engaged, then disengaged.<br><br>*LISTEN: Does four wheel drive "whine" when disengaged?*<br><br>*NOTE: It is normal for four wheel drive to "whine" when engaged.* | **NO:** Go to next check.<br><br>**YES:** If four wheel drive whines when disengaging, check oil levels and fill to correct levels. See your authorized dealer.<br><br>– – –1/1 |

## ⑨ Hydraulic System Checks

– – –1/1

| | | |
|---|---|---|
| **Main Hydraulic Pump Performance Check** | *NOTE: If hydraulic oil is not at operating temperature, heat oil to 38—52°C (100—125°F).*<br><br>Raise forks and tilt mast fully forward, keeping forks off ground.<br><br>Run engine at slow idle.<br><br>Measure cycle time to tilt mast back.<br><br>*LOOK: Maximum cycle time is eight seconds.*<br><br>*NOTE: Take the average cycle time for at least three cycles. This time will give a general indication of hydraulic pump performance.*<br><br>*LOOK: Is average maximum cycle time within eight seconds?* | **YES:** Go to next check.<br><br>**NO:** If cycle time is slow, see Hydraulic System in Troubleshooting chapter or see your authorized dealer.<br><br>– – –1/1 |

| | | |
|---|---|---|
| **Mast Cylinder Flow Retarder Check** | Run engine at slow idle.<br><br>Raise forks without load above machine.<br><br>Activate the mast cylinder down function halfway. Note speed of forks descent.<br><br>*LOOK: Speed must be metered by control valve.*<br><br>Fully activate the mast cylinder down function, and note speed of forks descent.<br><br>*LOOK: The forks must lower at a safe speed with any position of the control lever.* | **YES:** Go to next check.<br><br>**NO:** See your authorized dealer.<br><br>– – –1/1 |

| Symptom | Problem | Solution |
|---|---|---|
| **Abnormal Engine Noise** | Low or incorrect engine oil (too thin) | Add correct oil to proper level. |
| | Loose or worn hydraulic pump drive coupling | See your authorized dealer. |
| | Engine oil diluted with fuel | Inspect engine oil. See your authorized dealer. |
| | Incorrect fuel injection pump timing | See your authorized dealer. |
| | Excessive valve clearance | Adjust valve clearance. See your authorized dealer. |
| | Bent push rods | See your authorized dealer. |
| | Worn rocker arm shafts | See your authorized dealer. |
| | Loose connecting rod caps | See your authorized dealer. |
| | Loose main bearing caps | See your authorized dealer. |
| | Worn main bearings | See your authorized dealer. |
| | Worn connecting rod bearings | See your authorized dealer. |
| | Incorrect cam timing | See your authorized dealer. |
| | Scored piston | See your authorized dealer. |
| | Worn piston pin bushings and pins | See your authorized dealer. |

**Continued on next page**

## Electrical System

| Symptom | Problem | Solution |
|---|---|---|
| **Starting Motor Will Not Turn** | Start fuse | Check and replace if necessary. |
| | Starter | Be sure FNR lever is in neutral. Listen for “click” from starter solenoid. If “click” is heard, the starter control circuit is functioning. If “click” is not heard, repair starter. See your authorized dealer. |
| | Start relay | With the machine in neutral and clutch disconnect switch depressed, remove left-hand engine side shield and listen for “click” from starter relay when the key switch is moved to START position. If “click” is heard, the key switch, circuit breaker, start fuse, connectors, and neutral start switch are functioning and the starter relay, relay ground, or starter is worn. See your authorized dealer. |
| | Loose “bullet” connectors on start fuse holder | See your authorized dealer. |
| | Key switch | See your authorized dealer. |
| | Neutral start switch | See your authorized dealer. |
| | Start relay ground | See your authorized dealer. |
| | Start relay contacts | See your authorized dealer. |
| | Battery | See your authorized dealer. |
| | Corroded, loose, or broken battery post | See your authorized dealer. |
| | Wiring | See your authorized dealer. |
| | Excessive power train load | Depress clutch disconnect switch. |

Continued on next page

| Symptom | Problem | Solution |
|---|---|---|
| **Excessive Power Train Noise** | Engine low idle too slow | See your authorized dealer. |
| | Oil level low | Fill to correct oil level. |
| | Worn or damaged parts in transmission or axle | See your authorized dealer. |
| | Worn universal joints on drive shaft | See your authorized dealer. |
| | Misalignment of power train components | See your authorized dealer. |
| | No oil in lube circuit | See your authorized dealer. |
| | Hydraulic lines in contact with power train components | See your authorized dealer. |
| | Assembly adjustments or setting made incorrectly | See your authorized dealer. |
| **Excessive Gear Clash when Shifting** | Attempting to shift too fast | Following driving procedure in Driving the Machine chapter. |
| | Shifting without using neutral disconnect | Depress neutral disconnect when shifting. |
| | Shifters worn or broken | See your authorized dealer. |
| | Synchronizer problem | See your authorized dealer. |
| **Park Brake Pressure Light Comes On** | Park brake solenoid not working | See your authorized dealer. |
| | Park brake piston leak | See your authorized dealer. |
| | Park brake hose leaking | See your authorized dealer. |

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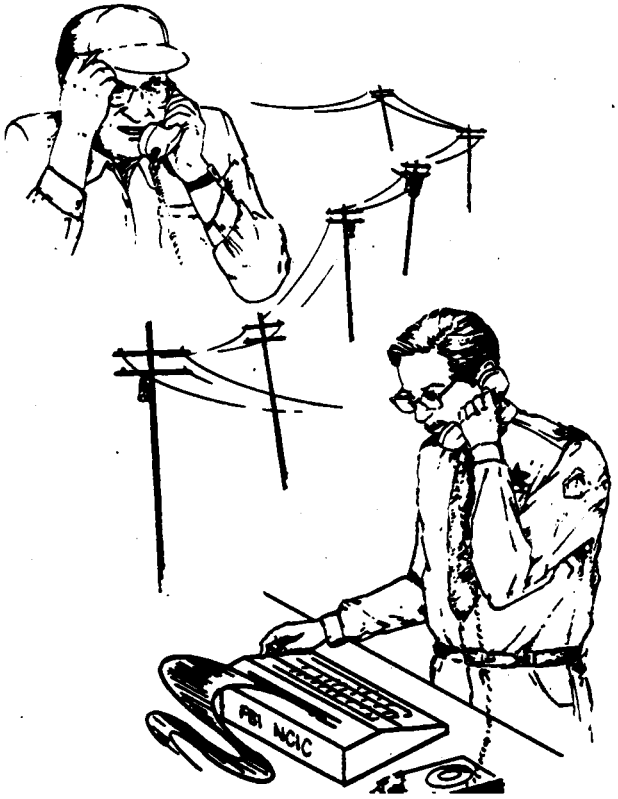
## Report Thefts Immediately

1. Immediately notify your local law enforcement agency and insurance agent.

2. Provide a complete description of the machine, all of the documented identification numbers and color photographs.

3. Request verification of the identification numbers after they have been entered with any regional or national crime information center. Double check the numbers to be sure they are correct.

4. Notify your John Deere dealer of the theft and request that its loss be posted with full description and identification numbers.




TS146 –UN–09JAN89

DX,CRPRV,G –19–03MAR93–1/1

## 485E, 486E, and 488E Forklift Operating Information

| Item | Measurement | Specification |
|---|---|---|
| Lift Capacity at Full Height[1] | | |
| 4.27 m (14 ft) Free Lift Mast, 486E | Weight | 2721 kg (6000 lb) |
| 4.27 m (14 ft) See-Thru Mast, 486E | Weight | 2721 kg (6000 lb) |
| 4.27 m (14 ft) See-Thru Mast, 488E | Weight | 3628 kg (8000 lb) |
| 6.40 m (21 ft) Free Lift Mast, 486E | Weight | 1134 kg (2500 lb) |
| 6.55 m (21.5 ft) See-Thru Mast, All Models | Weight | 1134 kg (2500 lb) |
| Rate of Lift @ 2350 rpm and Maximum Load | | |
| 4.27 m (14 ft) Free Lift Mast, 486E | Speed | 22 m/min (72 ft/sec) |
| 4.27 m (14 ft) See-Thru Mast, 486E/488E | Speed | 19 m/min (62 ft/min.) |
| 6.40 m (21 ft) Free Lift Mast (Stages 1 and 2), 486E | Speed | 22 m/min (72 ft/sec) |
| 6.55 m (21.5 ft) See-Thru Mast | Speed | 29 m/min (94 ft/min.) |
| Side Shift, Right and Left of Center | | |
| All models, Free Lift or See-Thru | Distance | 76 mm (3 in.) |

*[1]Measured at 610 mm (24 in.) from heel of fork with load centered.*

CED,OUO1057,4 –19–15JUL98–1/1