Section 2
SPECIFICATIONS

GENERAL INFORMATION.

This section gives specification tables for each major machine system of the

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Section 4
MAINTENANCE

TABLE 4-1. MAINTENANCE SCHEDULE.

FIG' 4-1 ITEM NO.	ITEM	8/ DAY	250/ 3 MO	500/ 1 YR	1000/ 1 YR	2000/ 2 YR	QUAN.	TYPE/REMARKS
1	ENGINE OIL	X	C*				6.3 Qts. [6.0 L]	All temperature Texaco - "URSA" SUPER PLUS 15W40, or equivalent premium motor oil meeting CD/ SF standards.*
2	ENGINE OIL FILTER		C*				1	Change at EACH engine oil change Use APPROVED filter ONLY.*
3	ENGINE FUEL FILTER			C*			1	Change at interval shown. Use APPROVED filter ONLY.*
4	FUEL LEVEL - IN TANK	X					10.0 Gal. [38 L]	#1D or #2D diesel fuel. See Section 2 - SPECIFICATIONS, for complete specifications.
5	ENGINE INLET AIR FILTER ELEMENT	X			C**		1	Check condition indicator light. Change element as needed.**
6	ENGINE COOLING SYSTEM	X					Air Path	Check cooling air path. If required clean total cooling air path as needed.*

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WARNING: **Do NOT change the engine lubrication oil when the engine and lubrication oil are HOT.**
Change when WARM ONLY. Hot oil can cause serious injury.

CAUTION: **Do NOT change the engine lubrication oil with the engine in a "running" condition.**
Serious engine damage, or failure will, occur.
Clean the area around the engine lubrication oil dipstick and oil filler cap BEFORE removing the dipstick or oil filler cap.

With the engine "STOPPED", and with "WARM" engine lubrication oil, proceed as follows:

a. Clean the area around the engine lubrication oil drain plug found on the engine oil pan.

b. Place a container, having a capacity greater than 7 qts. [6.6 L], directly under the engine lubrication oil drain plug.

c. CAREFULLY remove the engine lubrication oil drain plug.

d. Drain ALL of the engine lubrication oil into the container.

e. Clean, install and CAREFULLY tighten the lubrication oil drain plug.

CAUTION: **Do NOT overtighten the drain plug. This action could cause damage to unit.**

f. Fill the engine to the CORRECT oil level, with the CORRECT engine lubrication oil.

NOTE: **See THIS section for the CORRECT amount and type of lubrication oil.**

g. Wash the oil filler cap and dry with compressed air. Install the oil filler cap and the engine lubrication oil dipstick.

CAUTION: **Do NOT start the engine BEFORE changing the engine lubrication oil filter. Follow the procedures given in THIS section, and in the engine "Operation Manual - FL 1011 Series Diesel Engine" published by Deutz Engine Company.**

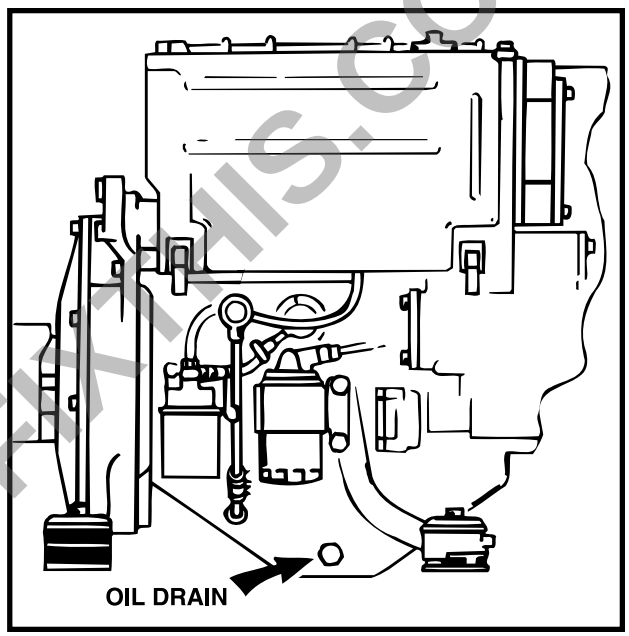


FIGURE 4-4. DEUTZ DIESEL ENGINE - LUBRICATION OIL DRAIN PLUG LOCATION.

CHANGING THE ENGINE LUBRICATION OIL FILTER [See Figure 4-5].

The engine lubrication oil filter MUST be changed after EACH 250 hours of machine operation, when the engine lubrication oil is changed.

WARNING: **Do NOT change the engine lubrication oil filter when the engine and lubrication oil are HOT. Change the filter when "WARM" only. Hot oil can cause serious injury.**

CAUTION: **Do NOT change the engine lubrication oil filter with the engine running. Serious engine damage, or failure, will occur.**

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FILLING THE HYDRAULIC SYSTEM.

NOTE: **Using the filling and flushing unit to fill the hydraulic system ensures that all hydraulic components are filled and bled with clean hydraulic oil.**

1. The travel motors and drum motor must be filled with hydraulic oil.

2. Detach the pressure hose (Fig. 1/1) from the vibration valve and connect to the pressure hose of the filling and flushing unit.

3. Plug the vibration valve connection.

4. Hold the other hose of the filling and flushing unit in the bag filled with clean hydraulic oil or in a filled oil container.

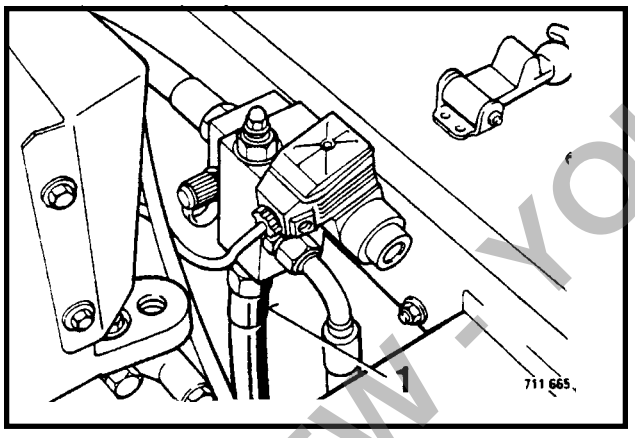


FIGURE 1.

5. Loosen the cap nuts (Fig. 2) and (Fig. 3) of the high-pressure hoses on the drum motor and travel motors.

6. Switch on the filling and flushing unit and ensure that the pressure has been set to at least 25 bar (read off from the built-in pressure gauge).

7. Do not tighten the cap nuts (Fig. 2) and (Fig. 3) until oil emerges at the appropriate point. Proceed in the same way with the remaining cap nuts.

CAUTION: **Collect the hydraulic oil and dispose of it so as to prevent pollution.**

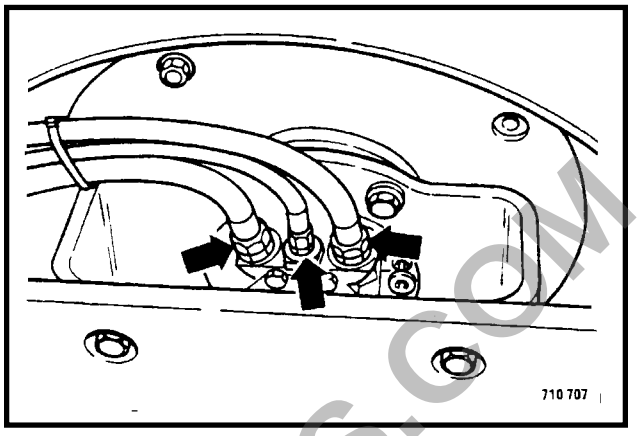


FIGURE 2.

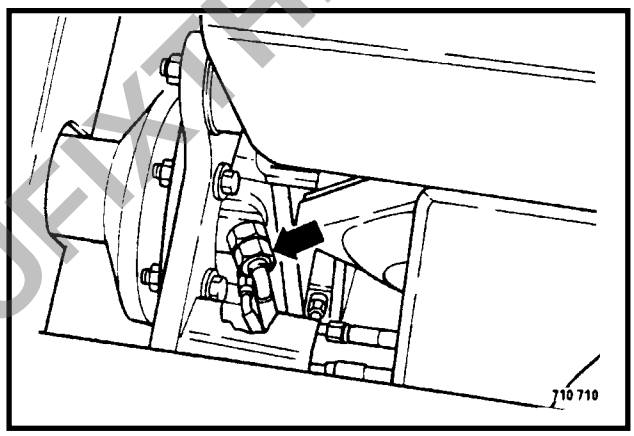


FIGURE 3.

8. Jack up the vehicle at the front and rear, so that the drums can rotate freely.

DANGER: **Do NOT stand under loads which are being lifted. Risk of injury.**

9. Connect a pressure gauge to the charge-pressure test connection on the travel pump (Fig. 4).

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Section 5
FRAME, HITCH and FALLING OBJECT/ ROLL OVER PROTECTION STRUCTURE

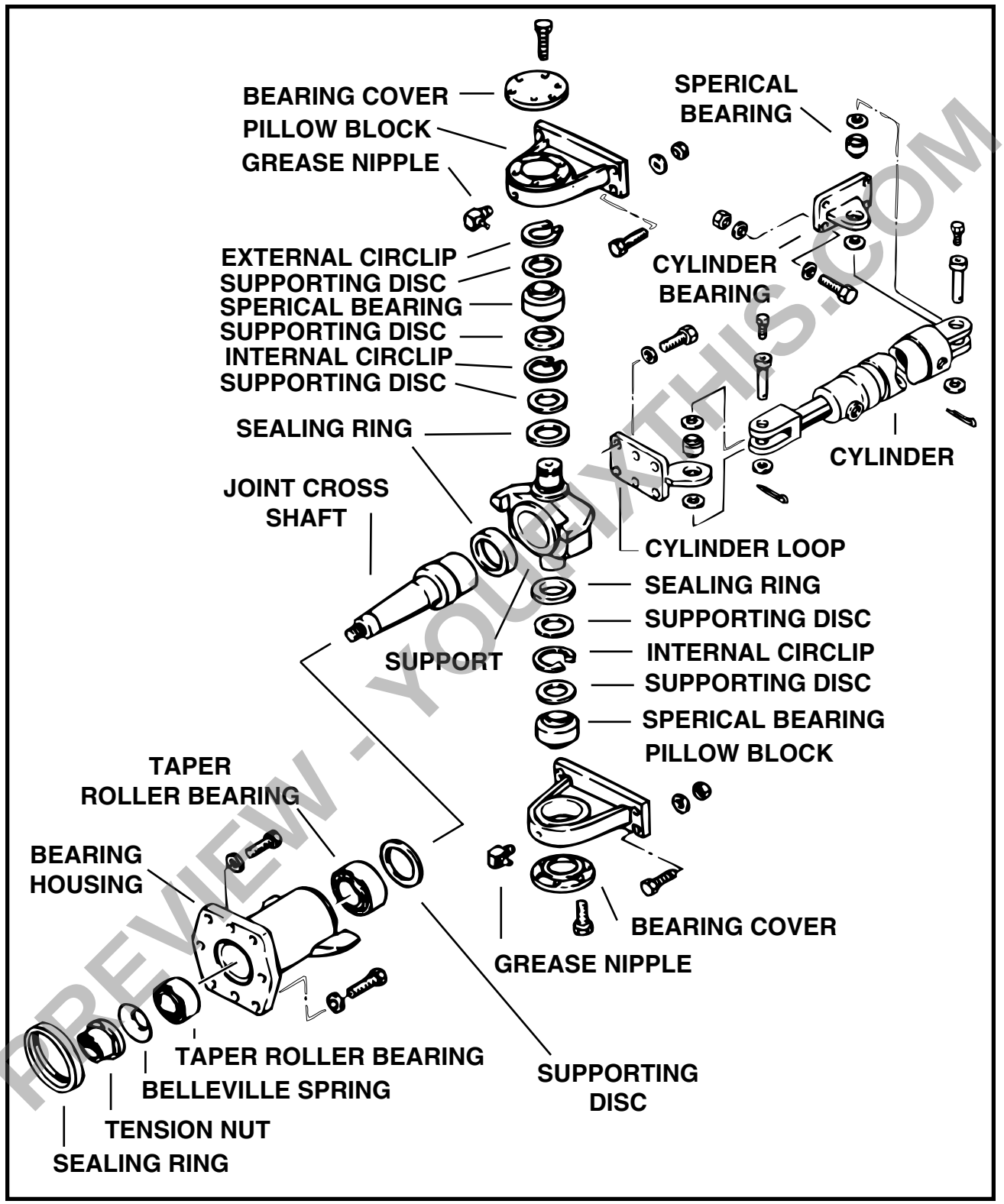


FIGURE 5-2. COMPONENTS OF THE HITCH ASSEMBLY.

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TABLE 2-16 TORQUE SPECIFICATIONS FOR METRIC FASTENERS.	
BOLT DIMENSIONS	TIGHTENING TORQUE - FT. LBS. / Nm.

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TROUBLE ANALYSIS FOR THE ELECTRICAL SYSTEM. [See Figures 7-1, 7-2 and 7-3].		
	PRIMARY CIRCUIT	
PROBLEM	**CAUSE**	**CORRECTION**
ENGINE WILL NOT CRANK	Battery is damaged [dead] - G1	Charge or replace battery.
	Initiator [neutral start] switch not in closed position - B10	Adjust, or replace, switch See Section 8]
	Damaged ignition switch - SO	Replace ignition switch.
	Damaged starter relay - K5	Replace relay.
	Damaged starter solenoid - M1	Replace starter solenoid.
	Damaged circuit wire -10/11/5/6/7	Repair, or replace, wire.
	Damaged battery cables - 5/6/7	Clean, or replace, battery cables.
ENGINE CRANKS SLOWLY	Damaged starter motor - M1	Repair, or replace, starter motor.
	Battery not fully charged - G1	Charge battery.
	Low ambient temperatures	Warm area around machine.
	Incorrect engine lubrication oil in engine	Remove oil and replace with correct oil.
ENGINE CRANKS BUT WILL NOT START	Fuel shut-off solenoid not energized - on engine assembly	Check current flow. Repair, or replace, fuel shut-off solenoid and/or valve.
	No fuel in tank	Add correct fuel.
	Fuel pre-cleaner, strainer and/or filter "plugged"	Replace pre-cleaner, strainer and/or filter with new.
	Air in fuel supply system	"Bleed" air from system.
	Damaged fuel pump	Replace pump.
	Incorrect injector pump timing	Set timing.
	Damaged injector pump	Replace pump.

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SERVICE AND REPAIR PRECAUTIONS



ALWAYS inspect all slings, chains, or cables when lifting components, be sure that they are properly tied, fastened and balanced before lifting. Be sure that the lifting device is capable of retaining the weight to be lifted.

NEVER attempt to lift heavy parts by hand when a lifting device should be used.

ALWAYS wear safety glasses when performing any maintenance or repair work on the machine.

NEVER attempt to remove or repair any component, on the machine, while the engine is running.

NEVER leave the machine and/or heavy parts in an unstable position during repair.

ALWAYS support the machine with sound blocking.

ALWAYS keep the machine and work area clear of lubricants and dirt.

ALWAYS use the correct tools for the repair procedures being done on the machine,

ALWAYS keep tools in a good and clean condition.

ALWAYS use approved parts, that are designed for the machine being repaired. This helps to ensure maximum service life of the machine.

ALWAYS be sure that all necessary nuts, bolts, snap rings, and other fastening devices, are removed before using force to remove components.

ALWAYS attach a sign in the machine operator's area, stating "DO NOT OPERATE" when the machine is being repaired.

ALWAYS observe ALL WARNING AND CAUTION statements given in the Operating Manual and Service Manual and found on the machine decals.

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FUEL TANK.

FILL the fuel tank to a COMPLETELY full condition, using the CORRECT, CLEAN fuel, BEFORE the machine is placed in storage [see THIS section].

CAUTION: **Do NOT leave the fuel tank ONLY part filled. Moisture can condense inside the fuel tank, while in storage, and can cause fuel system component damage during storage and/or when the machine is placed back into use.**

AIR CLEANER, EXHAUST AND OTHER OPENINGS.

Put a cap, tape or otherwise seal ALL openings to prevent the entrance of moisture, or other forms of contamination, while the machine is in storage.

DRIVE TIRES.

Check and adjust the air pressure of the drive tires to the CORRECT cold pressure [see this section]. Us e a jack, having a capacity of 5 tons [4.5 t] to carefully lift BOTH sides of the machine REAR frame assembly enough, so that BOTH drive tires are ABOVE the ground a SMALL amount. Put solid wood blocks under BOTH sides of the REAR frame, to keep the machine drive tires above the ground. Lower the machine onto the blocks. Remove the jack. Cover the drive tires to keep direct sun light from them.

WARNING: **Keep CLEAR of the jack, frame and blocks while lifting, blocking and lowering the machine. Serious injury can occur if caught by the above items. Block the rear machine frame SECURELY using solid wood blocking.**

EXPOSED COMPONENT RUST PREVENTION.

Put a heavy grease, or equivalent, onto the exposed area of the hydraulic cylinder rod. Put a rust preventative oil [such as L.P.S. #s 2 or 3] on ALL control linkages, control cable ends, hinges or other moving parts.

Put ALL covers and access plates in their correct position and secure in place with the retaining capscrews.

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TROUBLE ANALYSIS FOR THE TRANSMISSION SYSTEM

TRANSMISSION PUMP		
PROBLEM	**CAUSE**	**CORRECTION**
MACHINE ACCELERATION AND/OR DECELERATION IS SLOW [continued]	Engine not operating at correct speed - low RPM	Set engine at correct "high" idle RPM.
	High pressure relief valve open, or damaged	Remove, inspect, clean or replace valve as needed. Check pressure adjustment.
TRANSMISSION MOTORS		
PROBLEM	**CAUSE**	**CORRECTION**
WHEEL DRIVE MOTORS AND DRUM DRIVE MOTOR WILL NOT ROTATE IN EITHER DIRECTION	Secondary/parking brake system "on"	Release brake system.
	Wires to secondary/parking brake system switch reversed	Check wire connections and change as needed.
	Hydraulic system oil level low	Check oil level in reservoir. Add oil. Find and correct cause of low oil level.
	No output from transmission pumps	See "Machine Will Not Operate In Either Direction" - in the Transmission Pumps "Trouble Analysis".
	Secondary/parking brakes on wheel drive motors not releasing.	Check brake release hydraulic pilot pressure. Check release piston operation on wheel drive motors. Repair, or replace, components as needed.
	Wheel drive motors and drum drive motor have damage	Remove, repair or replace motors with new as needed. ***CAUTION:*** **Clean the entire hydraulic system AFTER a failure.**

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