MAINTENANCE

CA25 SERIES 2
VIBRATORY ROLLERS

From Serial No. 575 339
Diesel engine: Deutz F6L 912,
CAT D3208 NA, GM (Detroit) 3-53T

CONTENTS

READ THESE INSTRUCTIONS CAREFULLY BEFORE STARTING ANY SERVICE WORK.

Correct maintenance is essential to ensure that the roller will give many years of satisfactory service and the instructions given here should therefore be carefully followed.

Use the appropriate engine instruction manual in conjunction with these instructions.

LUBRICANTS

A B C D and **E** refer to the maintenance schedule.

Always use specified lubricants in the stated amounts. Excessive or insufficient grease or oil will cause parts to run hot, thus inducing rapid wear.

(A) GREASE — lithium base with EP additive (lead oleate), NLGI No. 2, Shell Alvania EP Grease 2.

(B1) ENGINE OIL — for API Service CD/SE, SAE 10W/30

(B2) ENGINE OIL — for API Service CD/SE, SAE 30

Air temperature	Viscosity CAT/DEUTZ	Viscosity GM
-10°C to +30°C	SAE 10W/30	SAE 30
-10°C to +50°C	SAE 15W/40	SAE 40

The instructions for the diesel engine (oil intervals, etc.) described in the manufacturer's instruction manual should be followed, in addition to those listed here.

(C) HYDRAULIC OIL — with anti-wear additive - Shell Tellus oil T 68

(D) LUBRICANTS OIL — SAE 90 HD (API, GL-5)

(E) BRAKE FLUID — Shell Donax HB

Note — Other lubrication recommendations apply if the roller is to be used under exceptionally hot or cold conditions. Refer to the "Special instructions" or contact DYNAPAC.

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EUROC

MAINTENANCE SCHEDULE
ROLLER WITH CATERPILLAR D 3208 NA ENGINE

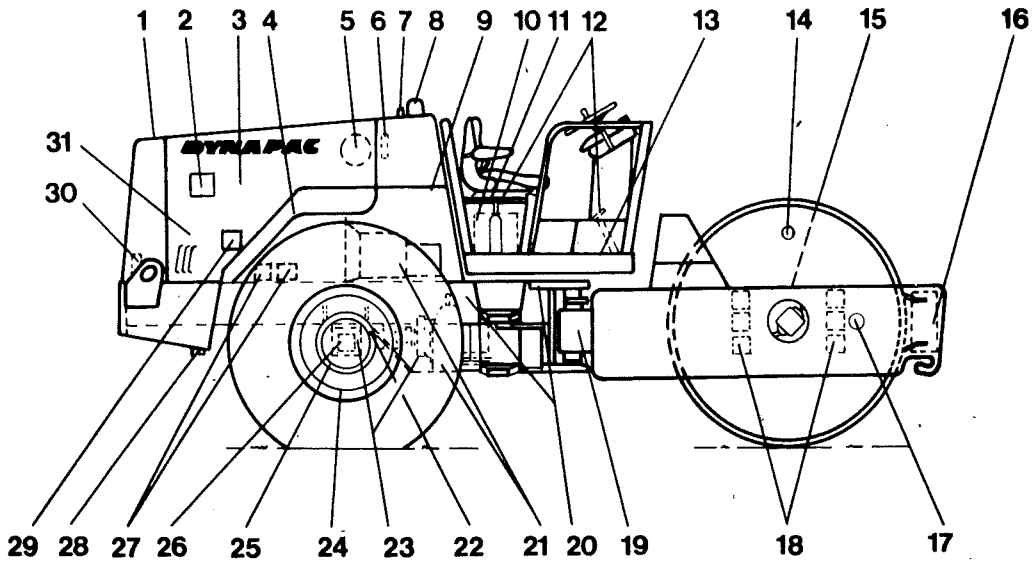

Fig 1 Service points on rollers fitted with Caterpillar engines

1 Cooling system - filler cap
2 Engine - fuel filter
3 Engine - valves
4 Engine - oil level
5 Air cleaner
6 Hydraulic oil tank - sight glass
7 Hydraulic oil tank - breather filter
8 Hydraulic oil filters (two)
9 Hydraulic oil tank - drain
10 Battery
11 Hydraulic oil - filler cap
12 Handbrake and foot brake
13 Brake cylinder (foot brake)
14 Drum oil - filler plug
15 Torque hub (only on CA 25D and CA 25PD machines)
16 Scraper
17 Drum oil - sight glass
18 Shock absorbers and mounting screws
19 Articulated joint
20 Steering cylinders
21 3-speed gearbox and pump drive
22 Universal joint
23 Brakes
24 Tyres - air pressure
25 Wheel nuts
26 Rear axle - lubricating oil levels
27 Engine - lubricating oil filter
28 Fuel tank - drain plug
29 Fuel system - water trap
30 Diesel fuel - filler cap
31 Engine - V-belts

Item in fig 1	Operation on CA 25 with CAT engine	Page	Lubricants see Page 1

DAILY (every 10 hours of operation)

16....	Scraper setting - adjust	14	
1....	Coolant level - check	14	
4....	Engine oil level - check	14	..... B1
6....	Oil level in hydraulic oil tank - check	15	 C
12....	Handbrake and foot brake - (test) adjust	16	
30....	Fuel tank - replenish	16	
- ...	Water filter/sprinkler - check (only on CA 25A machines)	16	
29....	Water trap - drain	17	
5....	Air cleaner indicator - check	17	

WEEKLY (every 50 hours of operation)

4	Engine oil - change * and		
27	oil filter - replace *	27	..... B1
5	Air cleaner filter element - clean hoses and connections - inspect for leakage	18	
10	Battery - check	19	
17	Drum oil level - check	20	..... D
18	Shock absorbers and mounting screws - inspect	20	
19	Articulated joint - lubricate	20	..... A
20	Steering cylinder mountings - lubricate	21	..... A
22	Universal joint - lubricate	21	..... A
24	Tyre pressures - check	22	
25	Wheel nut tightness - check	22	
15	Torque hub oil - change ** (only on D and PD machines)	38	..... D

EVERY 14 DAYS (every 100 hours of operation)

3	Engine valve clearances - check *	***	
1	Exterior of radiator - clean	23	
15	Torque hub oil level - check (only on D and PD models)	23	..... D

EVERY MONTH (every 200 hours of operation)

31	Fan belt and alternator V-belt tension - check	24	
4	Engine oil - change and		
27	engine oil filter - replace	27	..... B1
5	Air cleaner dust collector - clean	32	
8	Hydraulic oil filters - replace	32	
12,23..	Brakes - check, and adjust if necessary	33	
13	Brake cylinder fluid level - check	33	..... E
21	3-speed gearbox and pump drive oil levels - check	34	..... D
26	Rear axle planetary gears oil level - check	35	..... D
26	Rear axle differential oil level - check	35	..... D
9	Hydraulic oil tank - drain off condensate	36	
-	Controls and joints - lubricate	36	..... B

* Only on new or reconditioned engines
** Only on new rollers/torque hubs
*** See the engine instruction manual

MAINTENANCE SCHEDULE
ROLLER WITH CATERPILLAR D 3208 NA ENGINE

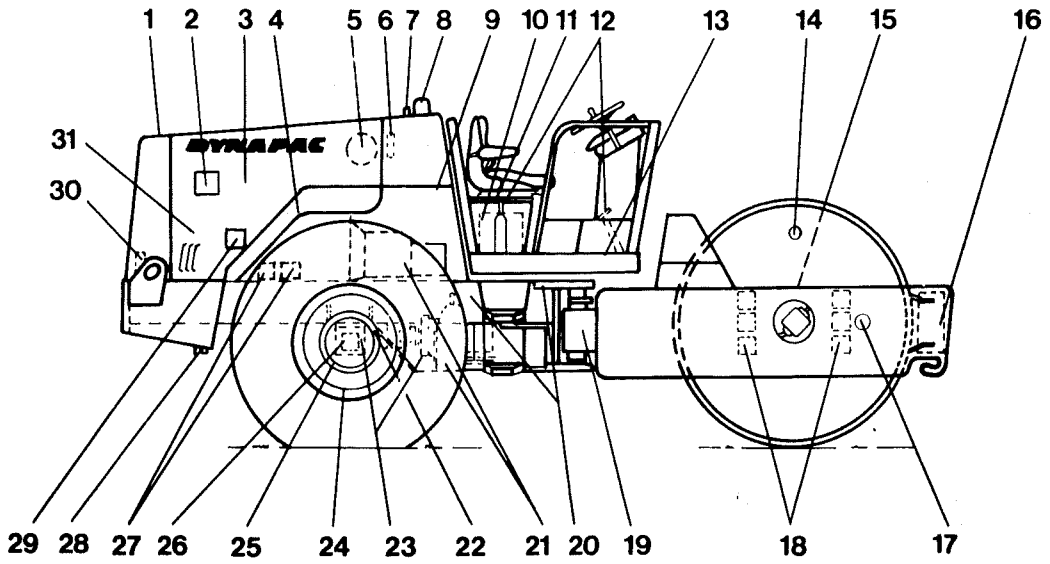

Fig 1 Service points on rollers fitted with Caterpillar engines

1 Cooling system - filler cap
2 Engine - fuel filter
3 Engine - valves
4 Engine - oil level
5 Air cleaner
6 Hydraulic oil tank - sight glass
7 Hydraulic oil tank - breather filter
8 Hydraulic oil filters (two)
9 Hydraulic oil tank - drain
10 Battery
11 Hydraulic oil - filler cap
12 Handbrake and foot brake
13 Brake cylinder (foot brake)
14 Drum oil - filler plug
15 Torque hub (only on CA 25D and CA 25PD machines)
16 Scraper
17 Drum oil - sight glass
18 Shock absorbers and mounting screws
19 Articulated joint
20 Steering cylinders
21 3-speed gearbox and pump drive
22 Universal joint
23 Brakes
24 Tyres - air pressure
25 Wheel nuts
26 Rear axle - lubricating oil levels
27 Engine - lubricating oil filter
28 Fuel tank - drain plug
29 Fuel system - water trap
30 Diesel fuel - filler cap
31 Engine - V-belts

Item in fig 1	Operation on CA 25 with CAT engine	Page	Lubricants see Page 1

EVERY THREE MONTHS (every 500 hours of operation)

1	Cooling system - replenish corrosion inhibitor	***	
3	Engine valve clearances - adjust	***	
7	Hydraulic oil tank breather filter - replace	37	

EVERY SIX MONTHS (every 1000 hours of operation)

14	Drum oil - change	37	D
28	Fuel tank - drain	38	
15	Torque hub oil - change (only on D & PD machines)	38	D
2	Fuel filter - replace	39	
-	Fuel system - bleed	39	

EVERY YEAR (every 2000 hours of operation)

11	Hydraulic oil tank oil - change	42	C
21	Pump drive and 3-speed gearbox oil - change	44	D
26	Rear axle planetary gear oil - change	45	D
26	Rear axle differential oil - change	46	D
1	Cooling system - flush	47	
-	Crankcase ventilation diaphragm - inspect	***	

*** See the engine instruction manual

MAINTENANCE SCHEDULE
ROLLER WITH DEUTZ F6L 912 ENGINE

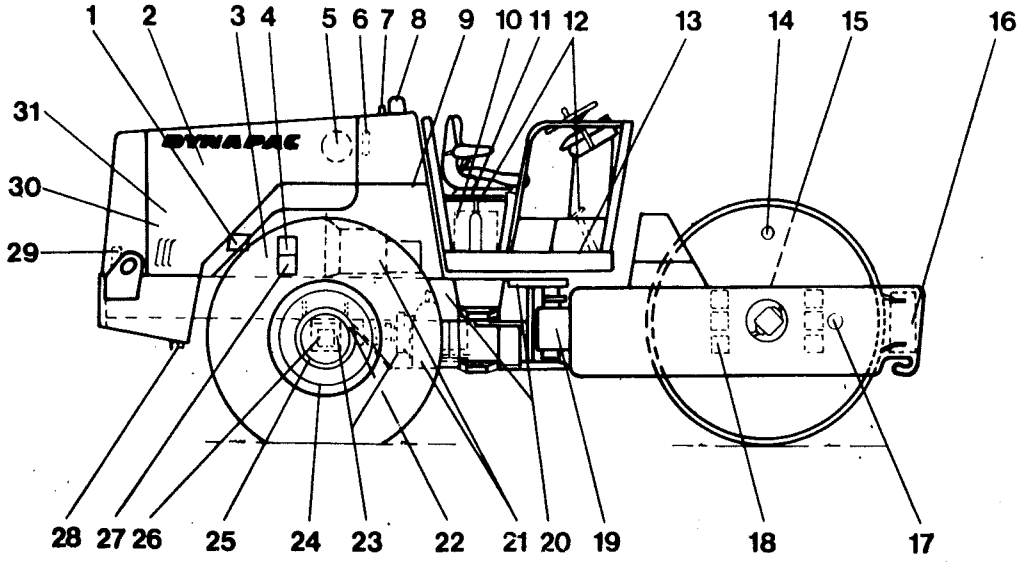

Fig 2 Service points on rollers fitted with Deutz engines

1 Feed pump - fuel
2 Engine - valves
3 Engine - oil level
4 Engine - fuel filter
5 Air cleaner
6 Hydraulic oil tank - sight glass
7 Hydraulic oil tank - breather filter
8 Hydraulic oil filters (two)
9 Hydraulic oil tank - drain
10 Battery
11 Hydraulic oil - filler cap
12 Handbrake and foot brake
13 Brake cylinder (foot brake)
14 Drum oil - filler plug
15 Torque hub (only on CA 25D and CA 25PD machines)
16 Scraper
17 Drum oil - sight glass
18 Shock absorbers and mounting screws
19 Articulated joint
20 Steering cylinders
21 3-speed gearbox and pump drive
22 Universal joint
23 Brakes
24 Tyres - air pressure
25 Wheel nuts
26 Rear axle - lubricating oil levels
27 Engine - lubricating oil filter
28 Fuel tank - drain plug
29 Diesel fuel - filler cap
30 Engine - V-belts & V-belt monitor
31 Hydraulic oil cooler

Item in fig 2	Operation on CA 25 with DEUTZ engine	Page	Lubricants see Page 1

DAILY (every 10 hours of operation)

16....	Scraper setting - adjust	14	
3....	Engine oil level - check	14,15 ...	B1
6....	Oil level in hydraulic oil tank - check	15	C
12....	Handbrake and foot brake - (test) adjust	16	
29....	Fuel tank - replenish	16	
- ...	Water filter/sprinkler - check (only on CA 25A machines)	16	
5....	Air cleaner indicator - check	17	
2	Engine valve clearances - check *	***	

WEEKLY (every 50 hours of operation)

3	Engine oil - change * and		
27	oil filter - replace *	29	B1
5	Air cleaner filter element - clean hoses and connections - inspect for leakage	18	
10	Battery - check	19	
17	Drum oil level - check	20	D
18	Shock absorbers and mounting screws - inspect	20	
19	Articulated joint - lubricate	20	A
20	Steering cylinder mountings - lubricate	21	A
22	Universal joint - lubricate	21	A
24	Tyre pressures - check	22	
25	Wheel nut tightness - check	22	
15	Torque hub oil - change ** (only on D and PD machines)	38	D

EVERY 14 DAYS (every 100 hours of operation)

2	Engine cooling fins - clean *	23	
31	Hydraulic oil cooler - clean externally	23	
15	Torque hub oil level - check (only on D and PD machines)	23	D

EVERY MONTH (every 200 hours of operation)

30	V-belt monitor - check	25	
30	Fan belt and alternator V-belt tension - check	26	
3	Engine oil - change and		
27	engine oil filter - replace	29	B1
5	Air cleaner dust collector - clean	32	
8	Hydraulic oil filter - replace	32	
23	Brakes - check, and adjust if necessary	33	
13	Brake cylinder fluid level - check	33	E
21	3-speed gearbox and pump drive oil levels - check	34	D
26	Rear axle planetary gears oil level - check	35	D
26	Rear axle differential oil level - check	35	D
9	Hydraulic oil tank - drain off condensate	36	
-	Controls and joints - lubricate	36	B

* Only on new or reconditioned engines
** Only on new rollers/torque hubs
*** See the engine instruction manual

MAINTENANCE SCHEDULE
ROLLER WITH DEUTZ F6L 912 ENGINE

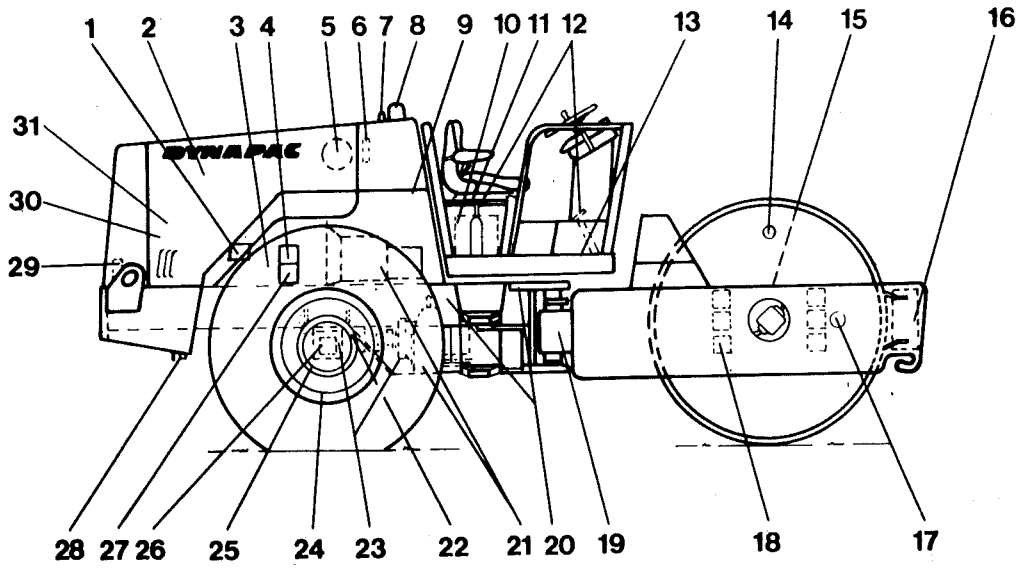

Fig 2 Service points on rollers fitted with Deutz engines

1 Feed pump - fuel
2 Engine - valves
3 Engine - oil level
4 Engine - fuel filter
5 Air cleaner
6 Hydraulic oil tank - sight glass
7 Hydraulic oil tank - breather filter
8 Hydraulic oil filters (two)
9 Hydraulic oil tank - drain
10 Battery
11 Hydraulic oil - filler cap
12 Handbrake and foot brake
13 Brake cylinder (foot brake)
14 Drum oil - filler plug
15 Torque hub (only on CA 25D and CA 25PD machines)
16 Scraper
17 Drum oil - sight glass
18 Shock absorbers and mounting screws
19 Articulated joint
20 Steering cylinders
21 3-speed gearbox and pump drive
22 Universal joint
23 Brakes
24 Tyres - air pressure
25 Wheel nuts
26 Rear axle - lubricating oil levels
27 Engine - lubricating oil filter
28 Fuel tank - drain plug
29 Diesel fuel - filler cap
30 Engine - V-belts & V-belt monitor
31 Hydraulic oil cooler

Item in fig 2	Operation on CA 25 with DEUTZ engine	Page	Lubricants see Page 1

EVERY THREE MONTHS (every 500 hours of operation)

2	Engine valve clearances - adjust	***	
7	Hydraulic oil tank filter - replace	37	

EVERY SIX MONTHS (every 1000 hours of operation)

14	Drum oil - change	37	D
28	Fuel tank - drain	38	
15	Torque hub oil - change (only on D & PD machines)	38	D
4	Fuel filter element - replace	40	
-	Fuel system - bleed	40	
-	Fuel feed pump strainer - clean	41	

EVERY YEAR (every 2000 hours of operation)

11	Hydraulic oil tank oil - change	42	C
21	Pump drive and 3-speed gearbox oil - change	44	D
26	Rear axle planetary gear oil - change	45	D
26	Rear axle differential oil - change	46	D

*** See the engine instruction manual

MAINTENANCE SCHEDULE
ROLLER WITH GM 3-53-T ENGINE

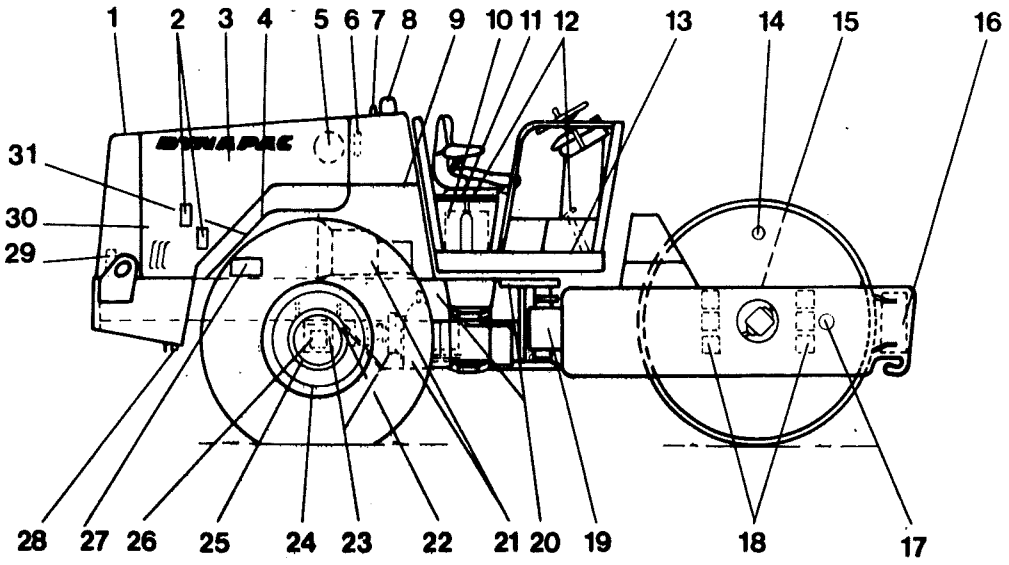

Fig 3 Service points on rollers fitted with GM (Detroit) engines

1 Cooling system - filler cap
2 Engine - fuel filter
3 Engine - valves
4 Engine - oil level
5 Air cleaner
6 Hydraulic oil tank - sight glass
7 Hydraulic oil tank - breather filter
8 Hydraulic oil filters (two)
9 Hydraulic oil tank - drain
10 Battery
11 Hydraulic oil - filler cap
12 Handbrake and foot brake
13 Brake cylinder (foot brake)
14 Drum oil - filler plug
15 Torque hub (only on CA 25D and CA 25PD machines)
16 Scraper
17 Drum oil - sight glass
18 Shock absorbers and securing bolts
19 Articulated joint
20 Steering cylinders
21 3-speed gearbox and pump drive
22 Universal joint
23 Brakes
24 Tyres - air pressure
25 Wheel nuts
26 Rear axle - lubricating oil levels
27 Engine - lubricating oil filter
28 Fuel tank - drain plug
29 Diesel fuel - filler cap
30 Engine - V-belts
31 Engine - fuel drain

Item in fig 3	Operation on CA 25 with GM engine	Page	Lubricants see Page 1

DAILY (every 10 hours of operation)

16	Scraper setting - adjust	14	
1	Coolant level - check	14	
4	Engine oil level - check	14,15	B2
6	Oil level in hydraulic oil tank - check	15	C
12	Handbrake and foot brake - (test) adjust	16	
29	Fuel tank - replenish	16	
-	Water filter/sprinkler - check (only on CA 25A machines)	16	
2	Fuel filters - drain	17	
5	Air cleaner indicator - check	17	

WEEKLY (every 50 hours of operation)

4	Engine oil - change * and		
27	oil filter - replace *	26	B2
5	Air cleaner filter element - clean hoses and connections - inspect for leakage	18	
10	Battery - check	19	
17	Drum oil level - check	20	D
18	Shock absorbers and mounting screws - inspect	20	
19	Articulated joint - lubricate	20	A
20	Steering cylinder mountings - lubricate	21	A
22	Universal joint - lubricate	21	A
24	Tyre pressures - check	22	
25	Wheel nut tightness - check	22	
15	Torque hub oil - change ** (only on D and PD machines)	38	D

EVERY 14 DAYS (every 100 hours of operation)

3	Engine valve clearances - check *	***	
1	Exterior of radiator - clean	23	
15	Torque hub oil level - check (only on D and PD machines)	23	D

EVERY MONTH (every 200 hours of operation)

30	Fan belt and alternator V-belt tension - check	26	
4	Engine oil - change and		
27	engine oil filter - replace	30	B2
2	Fuel filter - replace	31	
-	Fuel system - bleed	31	
5	Air cleaner dust collector - clean	32	
8	Hydraulic oil filter - replace	32	
23	Brakes - check, and adjust if necessary	33	
13	Brake cylinder fluid level - check	33	E
21	3-speed gearbox and pump drive oil levels - check	34	D
26	Rear axle planetary gears oil level - check	35	D
26	Rear axle differential oil level - check	35	D
9	Hydraulic oil tank - drain off condensate	36	
-	Controls and joints - lubricate	36	B

* Only on new or reconditioned engines
** Only on new rollers/torque hubs
*** See the engine instruction manual

MAINTENANCE SCHEDULE
ROLLER WITH GM 3-53-T ENGINE

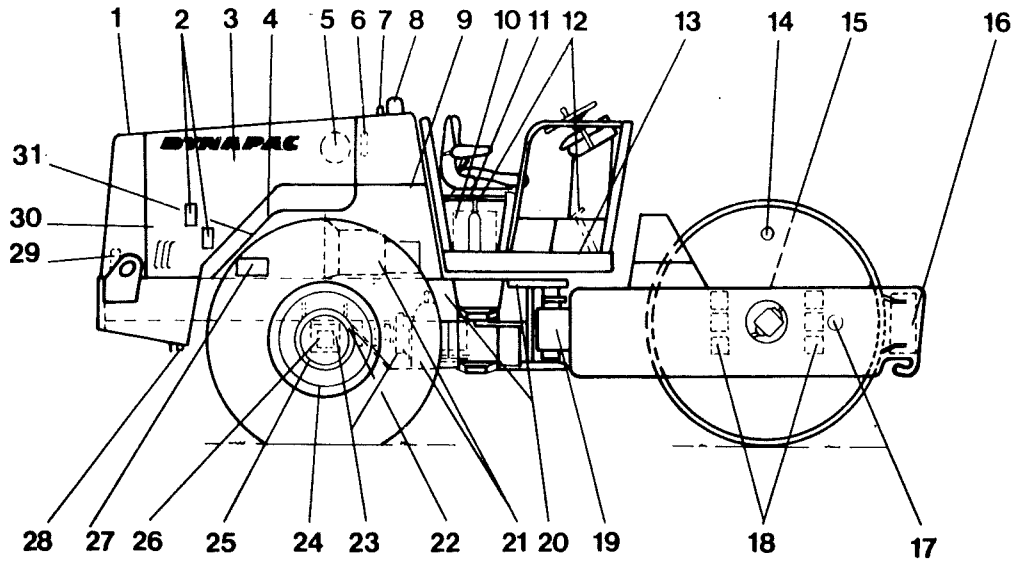

Fig 3 Service points on rollers fitted with GM (Detroit) engines

1 Cooling system - filler cap
2 Engine - fuel filter
3 Engine - valves
4 Engine - oil level
5 Air cleaner
6 Hydraulic oil tank - sight glass
7 Hydraulic oil tank - breather filter
8 Hydraulic oil filters (two)
9 Hydraulic oil tank - drain
10 Battery
11 Hydraulic oil - filler cap
12 Handbrake and foot brake
13 Brake cylinder (foot brake)
14 Drum oil - filler plug
15 Torque hub (only on CA 25D and CA 25PD machines)
16 Scraper
17 Drum oil - sight glass
18 Shock absorbers and mounting screws
19 Articulated joint
20 Steering cylinders
21 3-speed gearbox and transfer box
22 Universal joint
23 Brakes
24 Tyres - air pressure
25 Wheel nuts
26 Rear axle - lubricating oil levels
27 Engine - lubricating oil filter
28 Fuel tank - drain plug
29 Diesel fuel - filler cap
30 Engine - V-belts
31 Engine air box - drain

Item in fig 3	Operation on CA 25 with GM engine	Page	Lubricants see Page 1

EVERY THREE MONTHS (every 500 hours of operation)

1	Cooling system - replenish corrosion inhibitor	***	
3	Engine valve clearances - adjust	***	
7	Hydraulic oil tank breather filter - replace	37	

EVERY SIX MONTHS (every 1000 hours of operation)

14	Drum oil - change	37	D
28	Fuel tank - drain	38	
15	Torque hub oil - change (only on D & PD machines)	38	D
31	Air box drain tube - check	41	

EVERY YEAR (every 2000 hours of operation)

11	Hydraulic oil tank oil - change	42	C
21	Pump drive and 3-speed gearbox oil - change	44	D
26	Rear axle planetary gear oil - change	45	D
26	Rear axle differential oil - change	46	D
1	Cooling system - flush	47	

*** See the engine instruction manual

DAILY

(every 10 hours of operation)

Scrapers — adjusting

CAT, DEUTZ & GM

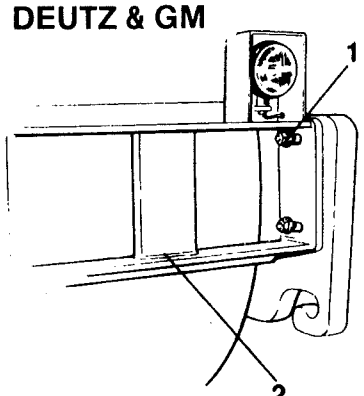

Fig 4 Front scraper

1 Mounting screws
2 Scraper

Adjust the scraper setting as follows:

1 Loosen all four mounting screws.

2 Set the scraper approx. 10 mm (0.4 in) away from the drum.

3 Retighten the mounting screws.

Cooling system — coolant level check

CAT & GM

⚠ CAUTION! AT OPERATING TEMPERATURES THE COOLANT IS HOT AND PRESSURISED. IF THE CAP IS REMOVED QUICKLY, COOLANT WILL BE RELEASED IN THE FORM OF STEAM AND MAY CAUSE SCALDING. USE GLOVES AND PROTECTIVE GOGGLES.

Coolant levels should be checked each day before the machine is run. If the coolant level must be checked at operating temperature the engine should be switched off first.

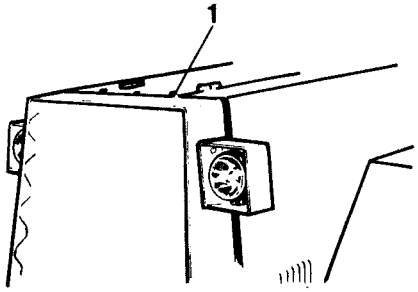

Fig 5 Radiator
1 Filler cap

1 Place a piece of cloth or the like over the filler cap and turn the cap to the first stop. When the pressure has fallen, press down the cap, turn further and then remove. The coolant level should reach the level tab in the radiator.

2 If necessary, replenish with water and corrosion inhibitor (CAT 3P2044 or equivalent). In winter, add anti-freeze as well.

Engine — oil level check

CAT

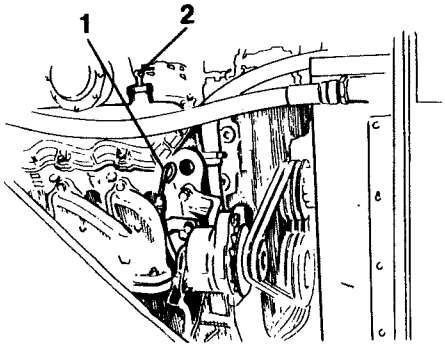

Fig 6 Diesel engine
1 Dipstick
2 Filler cap

1 Drive the roller onto a level surface and switch off the engine.

2 Remove the dipstick (1) and check the oil level.

3 If the oil is close to or below the lower mark, replenish with grade **B1** oil for CAT & DEUTZ and **B2** oil for GM, as recommended on page 1 under "Lubricants".

DEUTZ

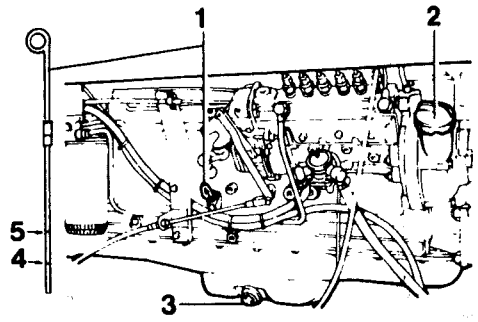

Fig 7 Checking the oil level

1 Dipstick
2 Filler cap
3 Drain plug
4 Lower mark
5 Upper mark

GM

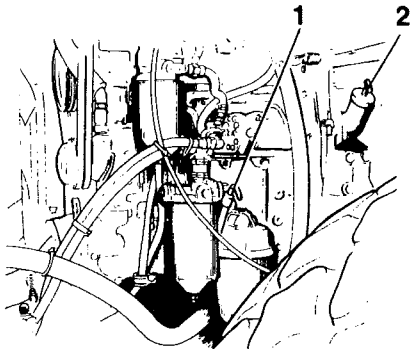

Fig 8 Checking the oil level

1 Dipstick
2 Filler cap

Hydraulic oil level — check CAT, DEUTZ & GM

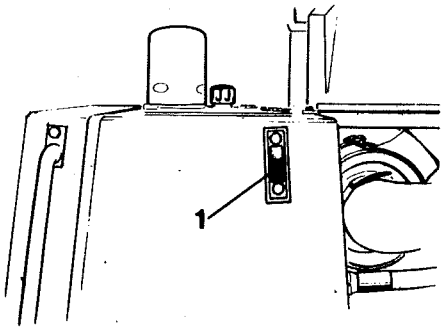

Fig 9 Hydraulic oil tank

1 Sight glass

1 Drive the roller onto a level surface and check the level of the oil in the sight glass (1).

2 If the oil level is more than 2 cm (0.75 in) below the top of the sight glass, replenish with grade **C** oil, as recommended on page 1 under "Lubricants".

Replenishing with oil

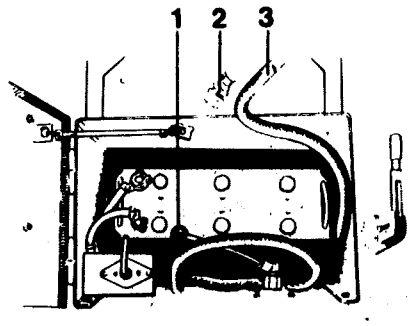

Fig 10 Battery box

1 Pump lever
2 Protective plug
3 Suction hose

3 Take the suction hose (3) out of the battery box.

4 Unscrew the protective plug (2) from the hose.

5 Insert the end of the hose into a drum of new hydraulic oil of grade **C** as recommended on page 1 under "Lubricants".

6 Operate the pump lever (1) to pump hydraulic oil into the tank, up to the full tank mark on the sight glass.

Pump the hydraulic oil through a filter into the tank. Always use this procedure when replenishing the oil.

Handbrake — adjusting/testing
CAT, DEUTZ & GM

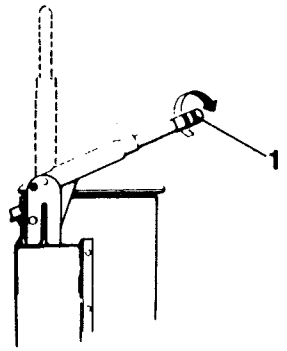

Fig 11 Handbrake

1 Adjusting knob

1 The brake is correctly adjusted when it is just possible to pull up the lever completely.

2 Adjust the brake by turning the lever knob clockwise.

Foot brake — testing
CAT, DEUTZ & GM

Test the action of the foot brake. If necessary, adjust in accordance with "Foot brake - adjusting", on page 33.

Replenishing with fuel
CAT, DEUTZ & GM

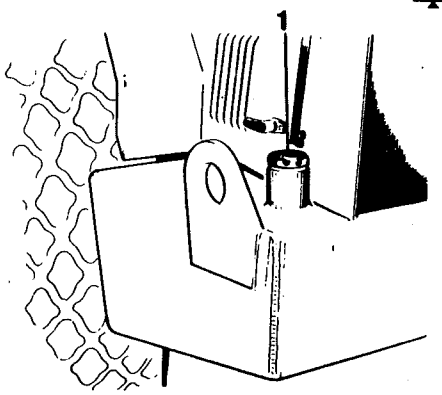

Fig 12 Fuel tank

1 Filler cap

Replenish the fuel tank daily to the lower edge of the filler neck. Use diesel fuel.

Refer to the appropriate manufacturer's instructions for the grade of diesel fuel.

Water filter and sprinklers — checking (only applies to the CA 25 A)

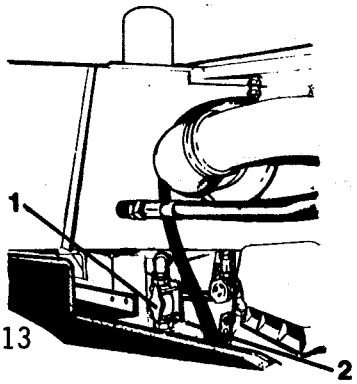

Fig 13

1 Tank cock
2 Filter casing

1 Close the tank cock (1) and remove the filter casing (2). If the water is cloudy or viscous - clean the filter casing and element with water.

2 Check that the sprinkler nozzles are not clogged.

Water trap — draining
CAT

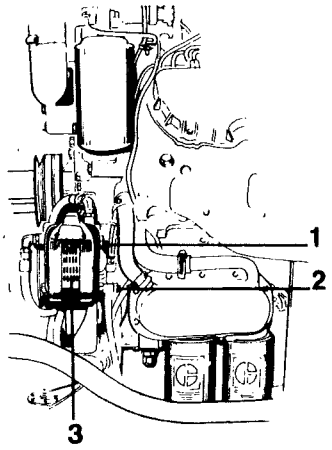

Fig 14 Engine

1 Air valve
2 Drain cock
3 Element

1 Open the air valve (1).

2 Open the drain cock (2).

3 After the water has drained, close the air valve (1) and the drain cock (2).

Replace the water trap element (3) when the inside of the water trap is so dirty that the water level is no longer visible through the glass.

Fuel filter — draining
GM

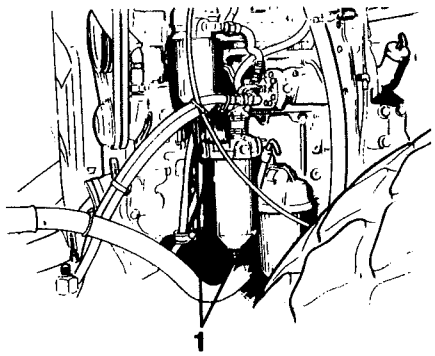

Fig 15 Diesel engine

1 Drain cocks

1 Open the drain cocks (1) on both filters and let the water drain out.

2 Close the cocks.

Air cleaner — checking the dust indicator
CAT, DEUTZ & GM

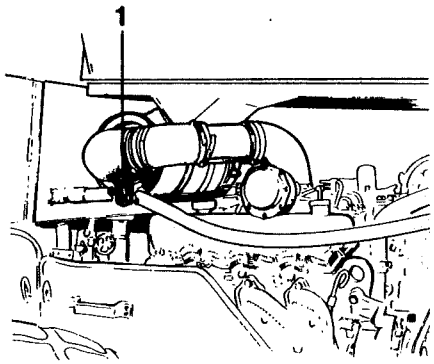

Fig 16 Diesel engine - air cleaner

1 Pressure-drop indicator

The air cleaner is fitted with a pressure-drop indicator, which is connected to a warning lamp on the instrument panel.

If the air cleaner warning lamp lights up when the engine is running at full speed, clean the filter (see under "Weekly", "Air cleaner - cleaning the filter element").

WEEKLY

(every 50 hours of operation)

Air cleaner — cleaning the filter element

CAT, DEUTZ & GM

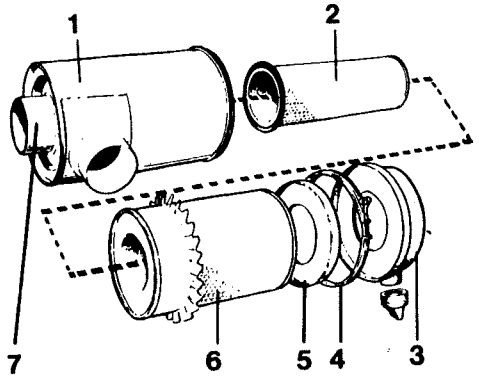

Fig 17 Air cleaner

1 Filter housing
2 Back-up filter
3 Outer cover/dust collector
4 Clamp
5 Inner cover
6 Main filter
7 Pressure-drop indicator

1 Release the clamp (4) and remove the outer cover (3).

2 Unscrew the wing nut in the centre of the filter and remove the inner cover (5). Use a clean cloth to clean the outer cover (3).

3 Unscrew the wing nut and remove the main filter (6).

4 Make sure that dust has not entered the filter during operation. Check that dust has not penetrated into the engine induction pipe. If it has, that means that the connections, hoses or element leak and must therefore be replaced.

5 Wipe clean the inside of the filter housing (1) and the induction pipes, using a clean cloth.

6 Check all connections between the air cleaner and engine to be certain they are tight and do not leak.

Note Replace the back-up filter after it has been cleaned three times or at every third change of the main filter. The back-up filter cannot be cleaned.

Cleaning with compressed air

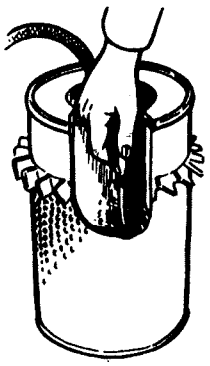

Fig 18 Main filter

Use compressed air at a maximum pressure of

0.7 MPa (7 kgf/cm^2) (100 psi).

Play the compressed air up and down along the folds of the paper at 45° to the inside of the filter element. Hold the nozzle at least 1 cm (0.4 in) away from the element to avoid damaging the paper.

Note Do not replace a filter element that has been washed in detergent until it is completely dry.

Cleaning by washing

If the filter element is sooty or oily, it should be washed in a solution of water and non-foaming detergent, such as "Donaldson D-1400".

The element should be totally immersed in a detergent solution and soaked for at least 15 minutes. Raise and lower the element in the solution from time to time to improve the cleaning effect. Do not allow contaminated water to flow into the inside of the filter.

Make sure that the filter element is intact before refitting it. If it has any holes or if the seals are defective, fit a new element. Shine a lamp through the filter when inspecting to ensure that it is clean and that there are no holes.

Battery — checking the liquid level
CAT, DEUTZ & GM

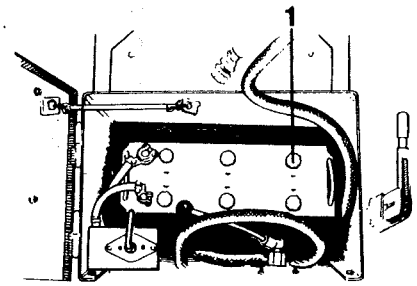

Fig 19 Battery box

1 Battery

1 Tilt the seat forward.

2 Wipe the top of the battery clean.

WARNING: THE ROLLER BATTERY CONTAINS SULPHURIC ACID. IF ACID GETS ON SKIN OR IN EYES, FLUSH IMMEDIATELY WITH LARGE QUANTITIES OF WATER AND GET MEDICAL ATTENTION.

⚠ NEVER USE A NAKED FLAME AND KEEP SPARKS AWAY WHEN CHECKING THE FLUID LEVEL, SINCE EXPLOSIVE GAS IS FORMED IN THE BATTERY WHEN IT IS BEING CHARGED.

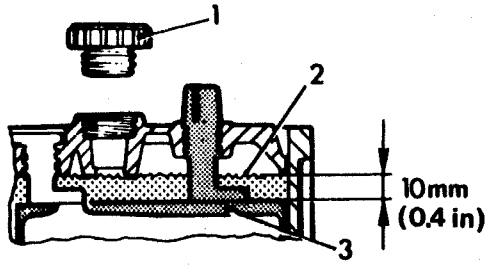

Fig 20 Battery liquid level

1 Cell plug
2 Liquid level
3 Plate

3 Remove the cell filler plugs and ensure that the level of the liquid is approx. 10 mm (0.4 in) above the plates.

Check all the cells. If the level is lower, top up to the correct level with distilled water.

If the air temperature is below freezing, run the engine for a while after adding the distilled water, since the water may otherwise freeze.

4 Ensure that the breather holes in the cell filler plugs are not blocked. Then replace the plugs.

5 The cable terminals should be clean and securely tightened. If corroded, clean them and coat them with acid-free petroleum jelly.

Drum oil level — check
CAT, DEUTZ & GM

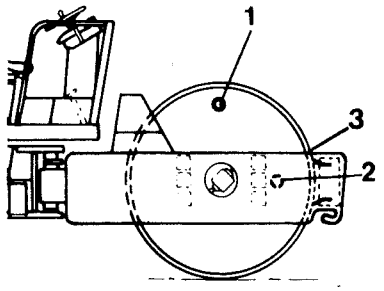

Fig 21 Checking the drum oil level

1 Filler plug/drain plug
2 Sight glass
3 Level pin (later models)

1 Drive the roller onto a level surface, so that the plug (1) is at its highest position. Later models are also fitted with a level pin (3), which should be level with the top of the frame member when the plug is at its highest position.

2 The oil level should reach approximately half-way up the sight glass (2).

3 Top up, as necessary, using grade **D** oil as recommended on page 1 under "Lubricants", but not more than half-way up the sight glass.

4 Check the other side of the drum according to 1-3 above.

Shock absorbers and securing bolts — check
CAT, DEUTZ & GM

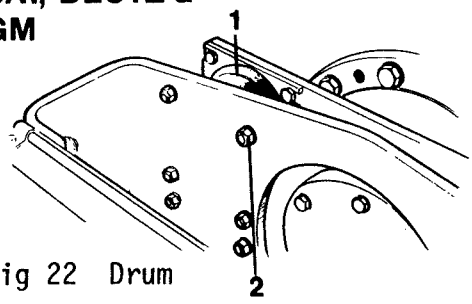

Fig 22 Drum

1 Shock absorbers
2 Mounting screws

Ensure that the shock absorbers are undamaged and that the mounting screws are correctly tightened. Replace shock absorbers when 20-25 mm (0.75-1 in) deep cracks are detected in them.

Use the blade of a knife or other pointed object when carrying out the inspection.

Articulated joint — lubricating
CAT, DEUTZ & GM

⚠ ENSURE THE VICINITY OF THE ARTICULATED JOINT IS CLEAR OF PERSONAL WHEN THE ENGINE IS RUNNING. INJURIES COULD OCCUR IF THE STEERING IS OPERATED.

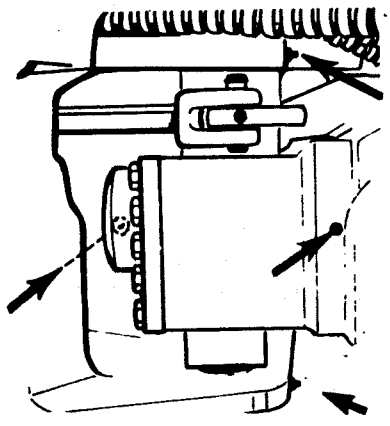

Fig 23 Grease nipples - articulated joint

1 Turn the drum section to the left so that all the grease nipples on the right-hand side of the articulated joint are accessible.

2 Clean any dirt and grease off the four nipples.

3 Grease each nipple with five strokes of the grease gun. Ensure that grease enters the bearings.

4 Turn the drum section to the right and apply grease to the nipples on the left hand side of the articulated joint in the same manner. Use grade **A** grease as recommended on page 1 under "Lubricants". Leave a little grease on the nipples after greasing, to prevent dirt from entering them.

Note If the grease does not enter the bearings, it may be necessary to reduce the load on the articulated joint by using a jack, and then repeat the lubrication procedure.

Steering cylinders — lubricating
CAT, DEUTZ & GM

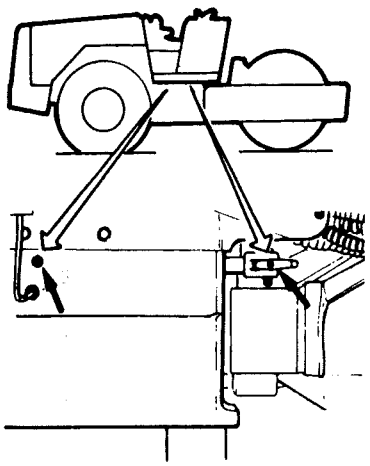

Fig 24 Grease nipples - steering cylinder

Grease the left-hand steering cylinder mounting immediately after greasing the articulated joint.

1 Clean any dirt and grease off the two nipples.

2 Grease each nipple with three strokes of the grease gun. Ensure that grease enters the bearings.

Use grade **A** grease as recommended on page 1 under "Lubricants".

Leave a little grease on the nipples after greasing, to prevent dirt from entering them.

3 Grease the two nipples on the right-hand steering cylinder in the same manner. Check that grease enters the bearings.

Universal joint — lubricating
CAT, DEUTZ & GM

⚠ CAUTION! NEVER WORK UNDER THE ROLLER WHEN THE ENGINE IS RUNNING. APPLY THE HANDBRAKE. BLOCK DRUM AND WHEELS IF NECESSARY.

The grease nipples on the universal joint are accessible from underneath the roller.

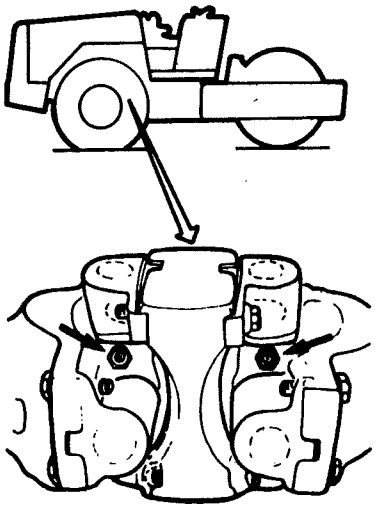

Fig 25 Grease nipples - universal joint

1 Crawl under the roller and check that the grease nipples are accessible with the grease gun.

It may be necessary to drive the roller forward slightly, to rotate the universal joint and move the nipples into an accessible position.

2 Clean any dirt and grease off the two nipples.

3 Grease each nipple with two strokes of the grease gun ensuring that grease enters the bearings.

Use grade **A** grease as recommended on page 1 under "Lubricants".

Leave a little grease on the nipples after greasing, to prevent dirt from entering them.

Tyre pressures
CAT, DEUTZ & GM

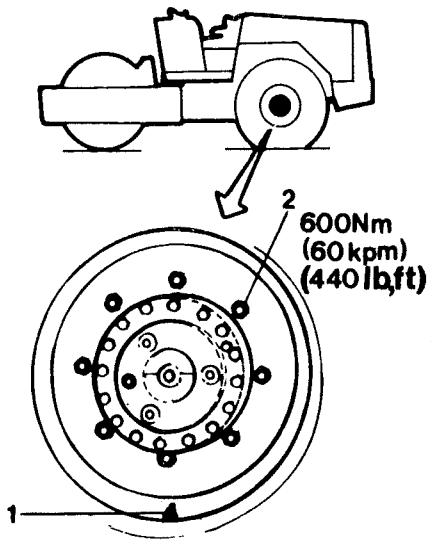

Fig 26 Wheel

1 Air valve
2 Wheel nut

Check the tyre pressures using a tyre pressure gauge.

The minimum tyre pressure is:
0.11 MPa (1.1 kgf/cm^2) (15.65 psi)

and the maximum tyre pressure is
0.15 MPa (1.5 kgf/cm^2) (21.3 psi).

Check both tyres.

Wheel nuts — tightening
CAT, DEUTZ & GM

Check that the wheel nuts are tightened to a torque of 550 Nm (55 kgf m) (400 ft.lb).

Check all nuts on both wheels.

EVERY 14 DAYS

(every 100 hours of operation)

Radiator — cleaning the exterior
CAT & GM

Ensure that air can flow freely through the radiator. If the radiator is dirty, clean it by flushing with water or by blowing through with compressed air. After cleaning, ensure that seals and sound-absorbers are not damaged.

Hydraulic oil cooler — cleaning the exterior
CAT, DEUTZ & GM

Ensure that air can flow freely through the cooler. If the cooler is dirty, clean by flushing with water or by blowing through with compressed air.

After cleaning, ensure that seals and sound-absorbers are not damaged.

Engine cooling fins — cleaning
DEUTZ

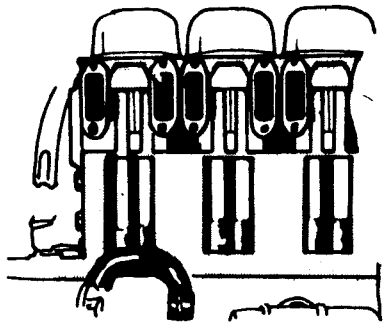

Fig 27 Engine - cooling fins

1 Release the catches and remove the air ducting from the engine.

2 Clean the cooling fins carefully, preferably using compressed air.

(Refer to the manufacturer's instruction manual for more detailed instructions.)

Drum gearbox oil level — check (CA 25 D & CA 25 PD)
CAT, DEUTZ & GM

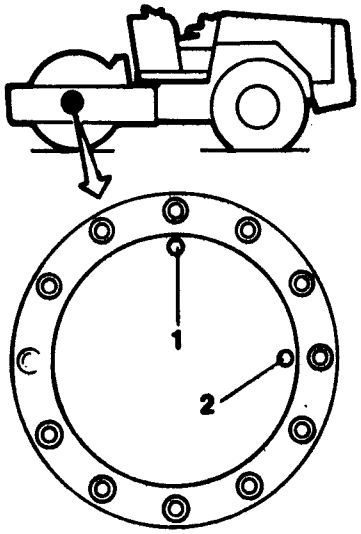

Fig 28 Replenishing with oil

1 Filler plug
2 Level/drain plug

This only applies to the CA 25D and CA 25PD.

1 Drive the roller onto a level surface so that the filler plug (1) is at its uppermost position on the drum.

2 Clean any dirt and grease off the area around the plugs.

3 Remove the plugs and check that the oil level is up to the level plug (2).

4 If necessary, replenish with grade **D** oil as recommended on page 1 under "Lubricants".

5 Refit the plugs.

EVERY MONTH

(every 200 hours of operation)

V-belt tension — check

CAT

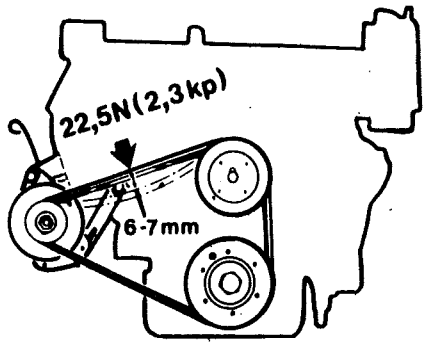

Fig 29 Checking V-belt tension

Check the tension of the fan, water pump and alternator belts by pressing the belts mid-way between the alternator pulley and the water pump pulley. It should not be possible to depress the belts by more than 6-7 mm (0.25 in).

V-belts tensioning

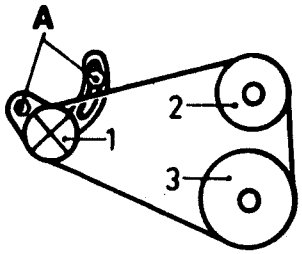

Fig 30 Tensioning the V-belts

1 Alternator
2 Water pump/fan
3 Crankshaft

1 Loosen the alternator mounting screws (A) slightly.

2 Ease the alternator outwards until the belt is again correctly tensioned.

3 Retighten the screws (A).

⚠ IF THE FAN GUARD HAS BEEN REMOVED, IT MUST BE REFITTED BEFORE THE ENGINE IS STARTED AND THE ROLLER OPERATED.

FAN BELT

V-belt monitor DEUTZ

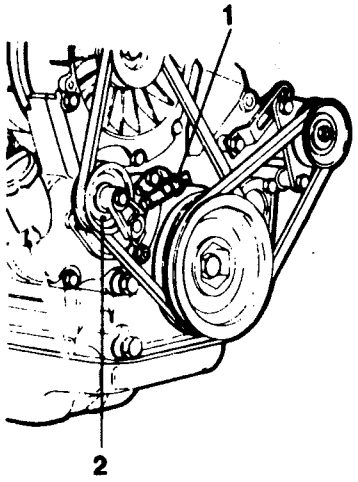

Fig 31 Checking the V-belt and V-belt monitor

1 V-belt monitor
2 Belt tensioner

The belt is tensioned by a spring-loaded belt tensioner (2). If the belt should break, the belt tensioner will be moved outwards by the spring and will actuate the pressure switch on the belt monitor (1) causing the horn to sound.

The V-belt monitor is also operative when the starter key is in the "OFF" position.

V-belt monitor — check

Depress the switch (1 in Fig 31). The roller horn should sound. If the alarm device is defective, it should be repaired immediately.

V-belt failure or replacement

1 Park the roller in a safe place.

2 Stop the engine.

3 Disconnect the battery lead from the battery, to stop the horn.

4 Fit a new V-belt (see the engine manufacturer's instruction manual.

5 Refit the battery lead and secure it.

V-belt tension — check DEUTZ

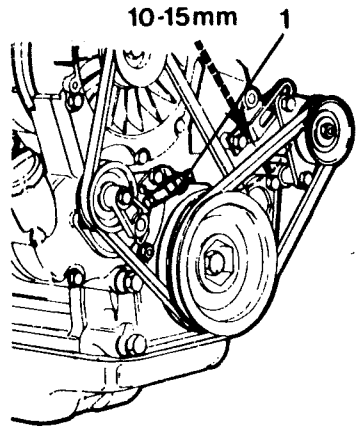

Fig 32 Checking the V-belt tension

1 V-belt monitor

Check the belt tension by pressing the belt midway between the alternator pulley and the crankshaft pulley. It should not be possible to depress the belt by more than 10-15 mm (0.4-0.6 in). If the deflection is greater, the belt must be tensioned.

At the same time, ensure that the monitor for the fan belt operates satisfactorily. The horn should sound when the monitor switch (1) is depressed.

Adjusting

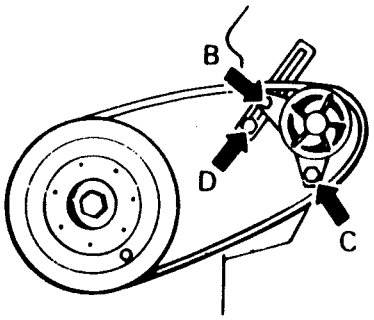

Fig 33 Tensioning the alternator V-belt

1 Loosen the alternator mounting screws (B) and (C) and nut (D).

2 Press the alternator outwards until the belt is again correctly tensioned (see above).

3 Retighten the screws (B), (C) and the nut (D).

V-belt tension — check GM

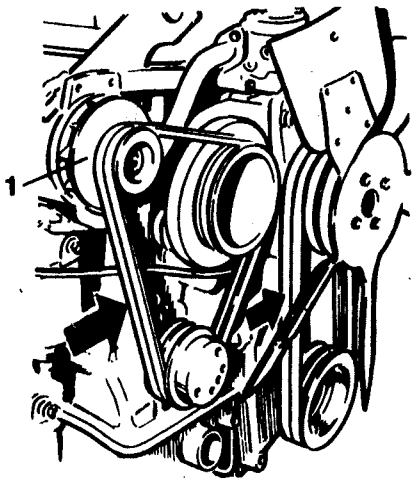

Fig 34 Checking the V-belts

1 Alternator

Check the belt tension by pressing the belt midway between the alternator pulley and the water pump pulley. It should not be possible to depress the belts by more than 13-19 mm (0.5-0.75 in).

For adjustment of the alternator belt (see above for CAT, Fig 30).

For adjustment of the fan belt, refer to the engine manufacturer's instruction manual.

General about lubrication of CAT, DEUTZ & GM engines

Engine — devitations from the normal oil change interval

Note Irrespective of the number of hours of operation, the engine oil and engine oil filter must be changed every six months. The oil filter must always be replaced when the engine oil is changed.

Oil change intervals depend on the grade of lubricating oil and the sulphur content of the fuel.

Changing the oil every month or every 200 hours of operation is conditional on the use of engine oil of grade "For API Service CD, SAE" and on the use of diesel fuel of good quality, with a sulphur content below 0.4%.

If oil of grade "For API Service CC/SC, SAE" is used or if the sulphur content of the diesel fuel is 0.4% or above, the oil should be changed earlier and more frequently (see the engine manufacturer's instructions).

Warm up the engine thoroughly before draining the oil.

Impurities in the lubricating system will then be well mixed with the oil and will be removed with it. Furthermore, the oil flows more readily when it is hot. Note the different oil recommendations for CAT & DEUTZ and GM (see page 1, "Lubricants").

Engine — oil change CAT

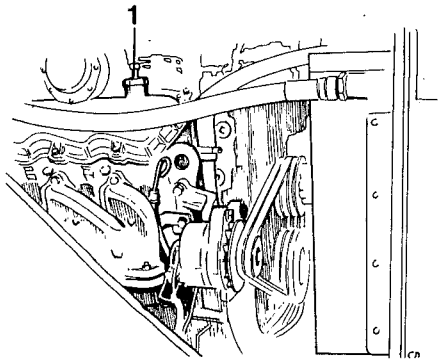

Fig 35 Filling up with oil - engine

1 Oil filler cap

1 Clean the area around the oil filler cap (1) and then remove it.

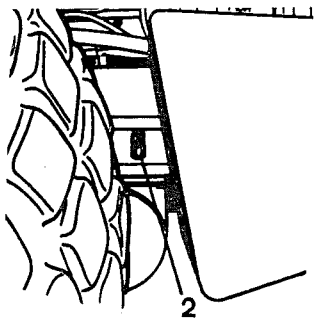

Fig 36 Draining the engine oil

2 Drain plug

2 Clean the area around the drain plug (2) and place a receptacle to hold at least 15 litres (4 US gallons) under the plug.

3 Remove the drain plug and allow the oil to drain into the receptacle while replacing the oil filters. Ensure that a receptacle is placed under the filters when they are replaced.

4 Wipe the drain plug clean. Fit it back into place and tighten it securely.

Engine — oil filters replacement
CAT

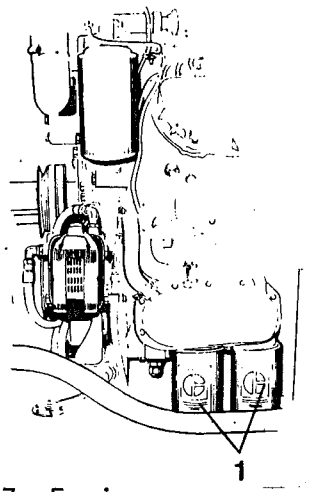

Fig 37 Engine

1 Oil filters

1 Remove both oil filters (1) and discard them. These are of the disposable type and cannot be cleaned.

Note Ensure that the old seals are not left on the filter head since leakage will then occur between the new and old seals.

2 Clean the sealing surfaces of the filter head with a clean, lint-free cloth.

3 Apply a thin film of clean engine oil to the new filter seals.

4 Screw the filters by hand until the seal seats against the filter head. Then tighten it an additional half-turn.

Note Do not tighten the filters too much, since this may damage the seals.

Engine — replenishing with oil
CAT

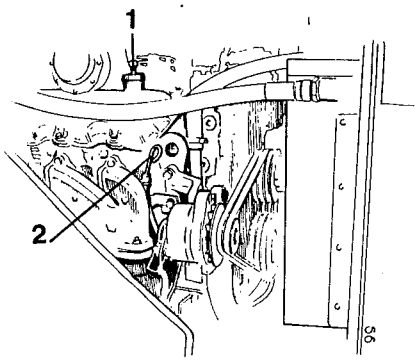

Fig 38 Engine

1 Oil filler cap
2 Dipstick

1 Replenish with fresh grade B1 oil as recommended on page 1 under "Lubricants".

Oil capacity:
- 14.5 litres (3.85 US gallons), when changing the filters.
- 13.5 litres (3.57 US gallons), when the filters are not changed.

2 Check the engine oil level using the dipstick (2).

The level should be up to the FULL mark. Do not overfill, since this may cause damage to the crankshaft seals.

3 Refit the filler cap (1). Tighten it firmly, ensuring that it seals satisfactorily.

4 Start and warm up the engine. Ensure that there are no oil leaks.

Engine — oil change
DEUTZ

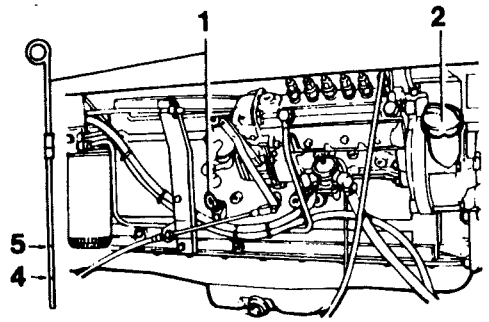

Fig 39a Engine

1 Dipstick
2 Oil filler cap
3 Drain plug
4 Lower level mark
5 Upper level mark

1 Remove the filler cap (2).

2 Remove the drain plug (3) and allow the oil to drain out into a suitable receptacle to hold at least 13 litres (3.5 US gallons), while changing the oil filter.

3 Clean the drain plug (3) and refit it.

Fig 39b

Engine — oil filter replacement
DEUTZ

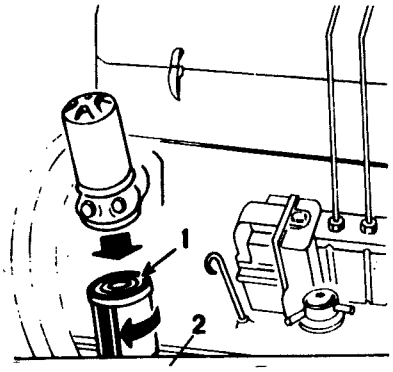

Fig 40 Engine

1 Rubber seal
2 Oil filter - shoulder

1 Fit a drift or screwdriver into the shoulder of the filter (2) and slacken the filter.

2 Unscrew the filter by hand.

Note Ensure that the old seals are not left on the filter head since leakage will then occur between the new and old seals.

3 Clean the sealing surfaces of the filter holder.

4 Lightly oil the rubber seal (1) on the new filter.

5 Screw the filter into place by hand until the rubber seal seats correctly and then turn the filter an additional half-turn.

Note Do not tighten the filter too much, since this may damage the seal.

Engine — replenishing with oil
DEUTZ

1 Replenish with new grade **B1** oil as recommended on page 1 under "Lubricants".

Oil capacity: approx. 12 l (3.17 US gallons).

2 Check the oil level using the dipstick (1). The level should be at the upper mark (5 in Fig 39a). If necessary, replenish with more oil.

3 Refit the filler cap (2 in Fig 39a).

4 Start and warm up the engine. Ensure that there are no oil leaks.

Engine — oil change

GM

Fig 41 Engine

1 Drain plug

1 Clean the area around the drain plug (1) and then place a receptacle to hold at least 12 litres (3.2 US gallons) under the plug.

2 Clean the area around the oil filler cap (1 in Fig 42) and then remove the cap.

3 Remove the drain plug and allow the oil to drain into the receptacle while replacing the oil filter.

4 Wipe the drain plug clean. Fit it back into place and tighten it securely.

Engine — oil filter replacement

GM

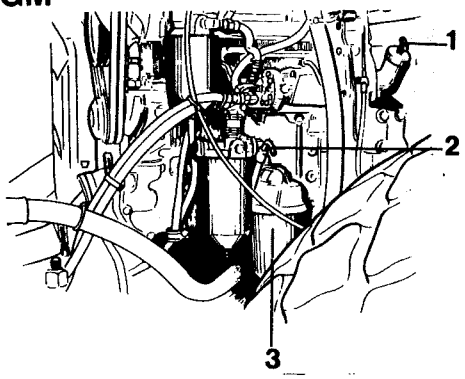

Fig 42 Engine

1 Filler cap
2 Disptick
3 Oil filter

1 Remove the oil filter (3) and discard it. It is of the disposable type and cannot be cleaned.

Note Ensure that the old seal is not left on the filter head, since leakage will then occur between the new and old seals.

2 Clean the sealing surface of the filter head with a clean, lint-free cloth.

3 Apply a thin film of clean engine oil to the new filter seal.

4 Screw the filter by hand until the seal seats against the filter head. Then tighten an additional half-turn.

Note Do not tighten the filter too much, since this may damage the seal.

Engine — replenishing with oil

GM

1 Replenish with fresh grade **B2** oil as recommended on page 1 under "Lubricants".
Oil capacity:
- o 10 litres (2.65 US gallons), when changing the filters
- o 9 litres (2.38 US gallons), when the filters are not changed.

2 Check the engine oil level with the dipstick (2 in Fig 42). The level should be up to the FULL mark. Do not overfill, since this may cause damage to the crankshaft seals.

3 Refit the filler cap (1 in Fig 42). Tighten it firmly, ensuring that it seals satisfactorily.

4 Start and warm up the engine. Ensure that there are no oil leaks.

Fuel filter — replacement
GM

Fig 43 Fuel filter

1 Retaining screws
2 Drain cocks

Hold a suitable receptacle under the filter.

1 Remove the fuel filters by first unscrewing the drain cocks (2). Then unscrew the retaining screws (1).

2 Remove the filter element holders and lift out the filter elements.

3 Clean the filter element holders in clean diesel fuel.

4 Soak the new filter elements in diesel fuel and fit them into the filter element holders.

5 Close the drain cocks and fill the filter element holders with clean diesel fuel.

6 Fit new seals and fit the filter element holders.

7 Tighten the retaining screws only sufficiently to achieve a good seal.

Fuel system — bleeding
GM

If air has entered the fuel system, the engine will either fail to start or will misfire. The fuel system must then be bled.

1 Stop the engine.

2 Remove both fuel filters and fill the filter element holders with fuel.

3 Remove one rocker cover and one fuel supply line, and run the engine a few revolutions, to expel the air from the system.

4 Retighten the fuel line and ensure that fuel does not leak from the pipe.

Air cleaner — cleaning the dust collector
CAT, DEUTZ & GM

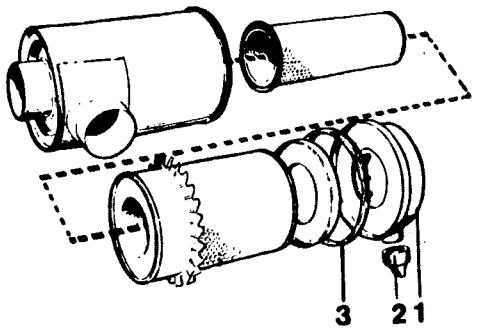

Fig 44 Air cleaner

1 Outer cover/dust collector
2 Valve
3 Catch

1 Release the catch (3) and remove the dust collector (1).

2 Empty the dust collector and wipe it clean.

3 Check the seals and replace any that are damaged. Ensure that the hoses and connections do not leak.

The dust collector is fitted with a self-discharging valve (2). This valve discharges dust and water continuously.

Hydraulic system filters —replacement
CAT, DEUTZ & GM

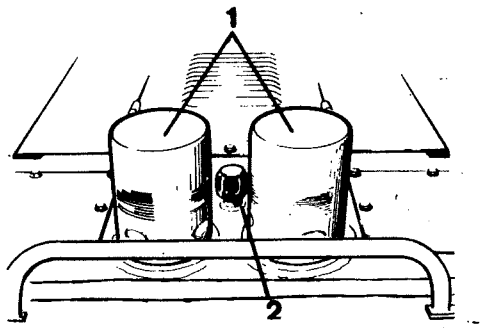

Fig 45 Hydraulic oil tank

1 Hydraulic oil filters
2 Breather filter

1 Remove the hydraulic oil tank breather filter to release any excess pressure in the tank.

2 Punch a hole in the top of each hydraulic oil filter allow the oil to drain.

3 Remove the hydraulic oil filters (1).

Discard the filters.

Note Ensure that the old seals are not left on the filter head, since leakage would occur between the new and old seals.

4 Clean the sealing surface of the filter heads carefully.

5 Apply a thin film of clean hydraulic oil to the new filter seals.

6 Tighten the filter by hand.

First screw the filter until the seal seats against the filter head. Then tighten it an additional half-turn.

Note Do not tighten the filter too much, since this may damage the seal.

7 Start the engine and check that there is no leakage around the filters.

Foot brake — adjustment
CAT, DEUTZ & GM

⚠ NEVER WORK UNDER THE ROLLER WHEN THE ENGINE IS RUNNING. BLOCK DRUM AND WHEELS IF NECESSARY.

If the braking system has no leaks and the brake pedal must be depressed a long way before the brakes act and the fluid level is correct, it will be necessary to adjust the brake shoes.

This adjustment compensates for brake lining wear.

Adjustment is achieved by means of the cams on the backplate. These are accessible from beneath the roller.

Park the roller on flat ground and place chocks under the wheels.

Each brake has two cams - one for each brake shoe. Both cams must be adjusted to obtain the correct setting.

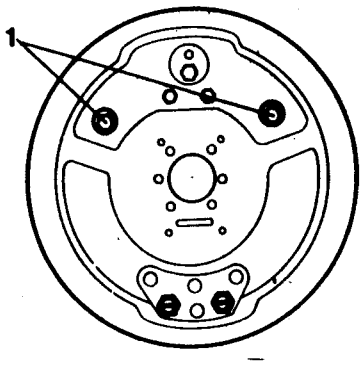

Fig 46 Brake drum - inside the rear axle

1 Cams

1 Adjust the cam (1) until the brake lining contacts the brake drum.

2 Then back off the cam until the brake lining is just clear of the drum.

3 Adjust the other brake in the same manner.

4 Drive the roller a few hundred metres, without use of the brakes.

5 Touch the brake drums with your hand. If a brake drum is hot, this indicates that one or both of the brake shoes are in contact with it. In that case, back off the cam a little further.

Allow the brake drums to cool, then carry out another trial run in the same manner.

6 Operate the roller and apply the brakes to check that they act satisfactorily.

Brake cylinder fluid level — check
CAT, DEUTZ & GM

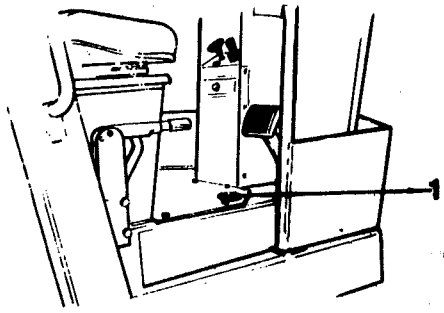

Fig 47 Brake cylinder - checking the fluid level

1 Filler plug

1 Thoroughly clean the area around the filler plug (1) and remove it.

2 Ensure that the fluid level is up to the bottom of the filler hole. If the level is low, replenish to the mark with brake fluid.

Use grade E brake fluid as recommended on page 1 under "Lubricants".

3-speed gearbox oil level — check
CAT, DEUTZ & GM

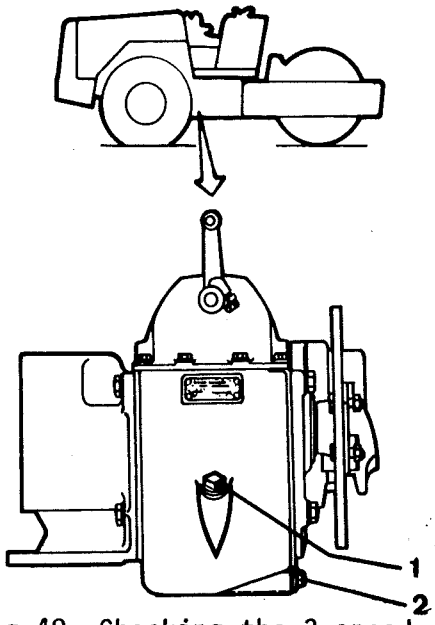

Fig 48 Checking the 3-speed gearbox oil level

1 Level plug
2 Drain plug

1 Ensure that the roller is standing on a level surface when checking the oil level.

2 Clean the area around the level plug (1) and remove it.

3 Ensure that the oil level reaches up to the plug hole. If the oil level is low, replenish with grade **D** oil as recommended on page 1 under "Lubricants".

Replenish with oil through the level plug (1) hole.

4 Refit the plug and tighten it securely.

Pump drive oil level — check
CAT, DEUTZ & GM

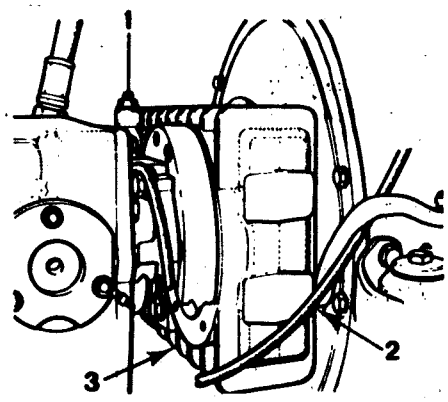

Fig 49 Checking the oil level

1 Filler plug
2 Level plug
3 Drain plug

1 Ensure that the roller is standing on a level surface.

2 Clean the area around the level plug (2) and loosen the plug a few turns. Oil should run out if the oil level is correct.

3 If necessary, replenish with oil through the filler plug (1) hole until the oil runs out through the level plug (2) hole.

Clean the area around the filler plug before removing it.

Replenish with grade **D** oil as recommended on page 1 under "Lubricants".

Note A level plug is located on each side of the pump drive. The oil level need only to be checked on one side.

Rear axle planetary gears oil level — check CAT, DEUTZ & GM

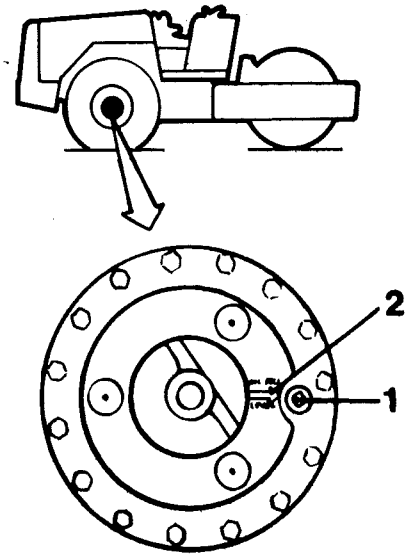

Fig 50 Checking the planetary gear oil level

1 Filler and level plug
2 Oil level mark
3 Drain plug

1 Drive the roller onto a level surface, until one of the planetary gears level plugs (1) is in the correct position.

The mark (2) on the planetary gear housing should then be horizontal.

2 Remove the level plug and ensure that the oil level is up to the plug hole.

If the oil level is low, replenish with oil to the correct level, through the level plug hole.

Replenish with grade **D** oil as recommended on page 1 under "Lubricants".

3 Check the planetary gear oil level on the other side in the same manner as described in 1 and 2 above.

Rear axle differential oil level — check CAT, DEUTZ & GM

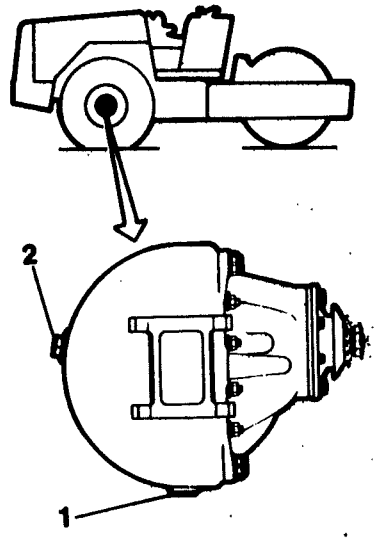

Fig 51 Checking the differential housing oil level

1 Drain plug
2 Level plug

⚠ CAUTION! NEVER WORK UNDER THE ROLLER WHEN THE ENGINE IS RUNNING. PARK THE ROLLER ON A LEVEL SURFACE. PLACE CHOCKS UNDER THE WHEELS.

1 Ensure that the roller is standing on a level surface.

2 Remove the level plug (2) and ensure that the oil level is up to the plug hole.

If the oil level is low, replenish to the correct level through the level plug hole.

Replenish with grade **D** oil as recommended on page 1 under "Lubricants".

Hydraulic oil tank — draining condensate
CAT, DEUTZ & GM

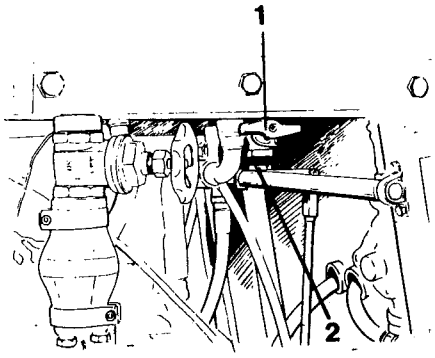

Fig 52 Hydraulic oil tank

1 Drain cock
2 Plug

Water and sediment in the hydraulic oil tank may be drained through the drain cock (1).

The water should be drained when the roller has been stationary some time - such as overnight.

Drain the condensate as follows:

- Hold a receptacle under the cock.
- Remove the plug (2).
- Open the cock and let any condensate drain.
- Close the cock.
- Refit the plug (2).

Controls and joints — lubrication
CAT, DEUTZ & GM

Lubricate all hinges, joints and controls with grade **B** oil as recommended on page 1 under "Lubricants".

EVERY THREE MONTHS

(every 500 hours of operation)

Breather filter – replacement

CAT, DEUTZ & GM

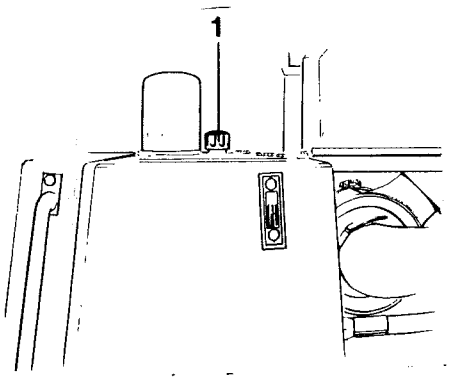

Fig 53 Hydraulic oil tank

1 Breather filter

Remove the filter (1) and ensure that the breather holes are not blocked.

Replace the filter every 500-1000 hours of operation.

Under dusty conditions, replace the filter every 500 hours of operation.

EVERY SIX MONTHS

(every 1000 hours of operation)

Drum – oil change

CAT, DEUTZ & GM

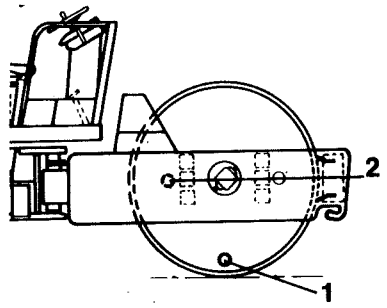

Fig 54 Draining the oil

1 Drain/filler plug
2 Sight glass

1 Drive the roller onto a slightly side sloping surface so that the drain plug (1) is at the lowest position.

2 Remove the plug and drain the oil.

Collect the oil in a receptacle.

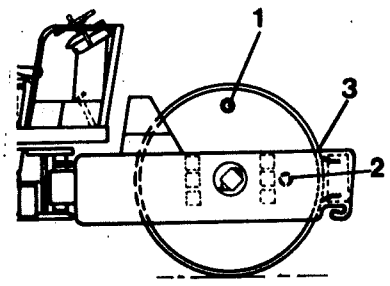

Fig 55 Filling with oil

1 Filler/drain plug
2 Sight glass
3 Level pin (later models)

3 Drive the roller onto a level surface so that the plug (1) is at its highest position (see Fig 55). Later models are also fitted with a level pin (3), which should be level with the top of the frame member when the plug is at its highest position.

4 The oil level should reach approximately half-way up the sight glass (2).

5 If necessary, replenish with grade **D** lubricating oil as recommended on page 1 under "Lubricants", until oil shows half-way up the sight glass. Do not overfill.

6 To change the oil in the other side of the drum, repeat steps 1-5 above.

7 Refit the plug (1).

Fuel tank — draining
CAT, DEUTZ & GM

Water and sediment in the fuel tank can be drained through the plugs (1) in the bottom of the fuel tank.

Note Do not drain all the fuel, since air may then enter the fuel system.

Draining should be carried out when the roller has been stationary some time - such as overnight.

The roller should preferably be left with one side slightly higher than the other, so that the water and sediment will collect at the lower drain plug.

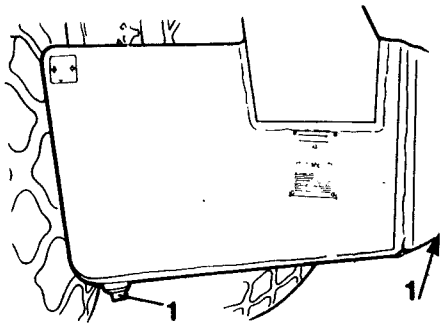

Fig 56 Fuel tank

1 Drain plugs

Drain as follows:

1 Clean the area around the lower drain plug.

2 Loosen the plug and drain the water and sediment until only clean diesel fuel flows from the drain plug hole. Then retighten the plug.

Drum gearbox — oil change
CAT, DEUTZ & GM

This only applies to CA 25D & CA 25PD rollers.

The torque hub should be at operating temperature before the oil is drained.

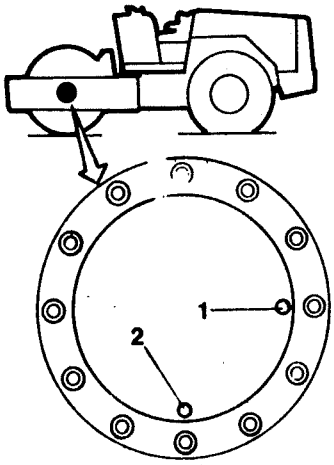

Fig 57 Draining the oil

1 Filler plug
2 Drain/level plug

1 Drive the roller onto a level surface so that the drain/level plug (2) is at the lowest position.

2 Clean the area around the plugs.

3 Place a receptacle to hold approx. 3.5 litres (1 US gallon) under the drain plug (2) and drain the oil. Also remove plug (1).

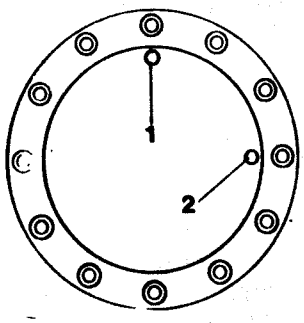

Fig 58 Replenishing the oil

1 Filler plug
2 Level/drain plug

4 Move the roller backwards so that filler plug (1) is in the highest position.

5 Replenish with oil through the filler plug hole (1) until the oil level reaches up to the level plug (2). Use grade **D** oil as recommended on page 1 under "Lubricants".

Oil capacity: approx. 3 litres (0.8 US gallons).

6 Refit the plugs.

Fuel filter — replacement
CAT

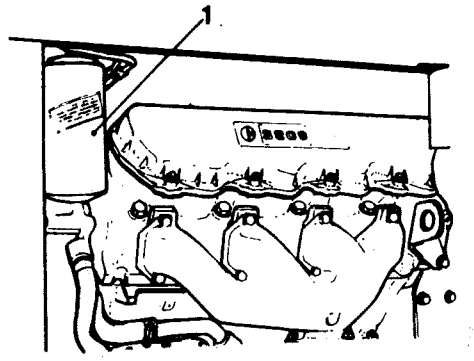

Fig 59 Replacing the fuel filter

1 Filter

1 Remove the fuel filter (1) and discard it. It is of the disposable type and cannot be cleaned.

2 Clean the sealing surface of the filter holder.

Note Ensure that the old seal is not left on the filter head, since leakage will occur between the new and the old seals.

3 Apply a thin film of diesel fuel to the new filter seal.

4 Screw the filter into place by hand. First tighten the filter into place, until the seal seats against the filter head, and then tighten an additional half-turn.

5 Bleed the fuel system (see below).

Start the engine and ensure that the filter does not leak.

Fuel system — bleeding
CAT

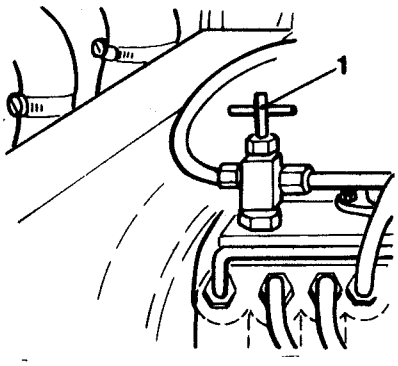

Fig 60 Bleeding the fuel system

1 Bleed screw

If air has entered the fuel system, the engine will either fail to start or it will misfire. The fuel system must then be bled.

1 Stop the engine.

2 Loosen the bleed screw (1) on the top of the fuel pump.

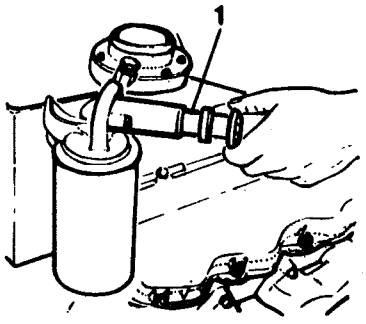

Fig 61 Bleeding the fuel system

1 Priming pump

3 Operate the priming pump (1) until the fuel flows out of the bleed screw in a steady stream and is completely free from air bubbles. Do not pump out more fuel than necessary.

Note Use only the hand pump when the bleed screw is open.

The pump handle is secured in the closed position. To release it, turn the handle anti-clockwise until it is free. When the bleeding operation is complete, secure the handle again by pressing it in and turning it clockwise until resistance is met.

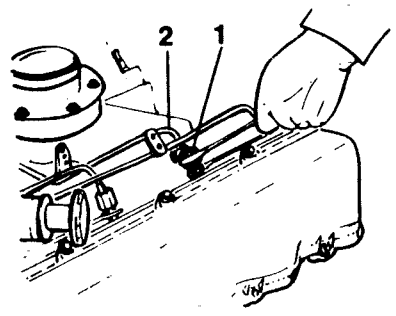

Fig 62 Bleeding a fuel line

1 Nut
2 Fuel line

4 Tighten the bleed screw.

5 Start the engine.

If the engine misfires or runs unevenly, bleed the lines to the injection nozzles.

- To do this, loosen the nut (1) at one injection nozzle when the engine is running and allow fuel to flow freely until it does so evenly and contains no air bubbles. Then retighten the nut.
- Bleed one line at a time, until all lines have been bled.

Fuel filter — replacement

DEUTZ

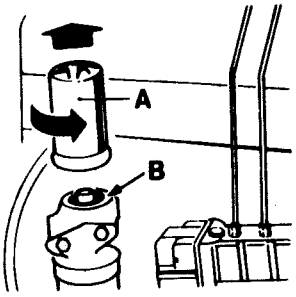

Fig 63 Replacing the fuel filter

1 Unscrew fuel filter (A) carefully, since fuel will flow from the filter.

2 Clean the sealing surface (B).

3 Apply clean diesel fuel to the rubber gasket on the new filter.

4 Screw the new filter into place by hand, until the rubber gasket seats correctly, then tighten an additional half-turn.

5 Bleed the fuel system (see below).

Start the engine and ensure that the filter does not leak.

Fuel system — bleeding

DEUTZ

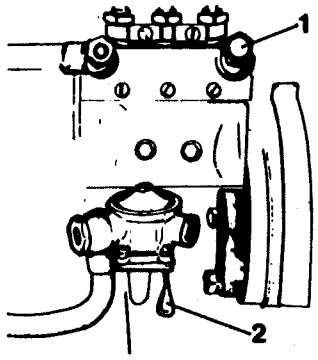

Fig 64 Bleeding the fuel system

1 Screw
2 Pump lever

1 Loosen the screw (1).

2 Manually operate the pump lever (2) on the feed pump until the fuel flowing out at the screw (1) is free from air bubbles.

3 Retighten the screw (1).

Note If no fuel flows out past the bolt when the hand pump is operated, turn the engine over using a 36 mm (1 7/16 in) non-adjustable spanner fitted to the crankshaft nut.

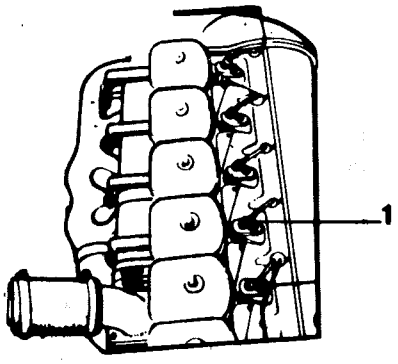

Fig 65 Bleeding the pressure lines

1 Connecting nut

4 If the pressure lines have been disconnected, they must also be bled.

5 Loosen the pressure line connection (1) a couple of turns and run the starter motor until bubble-free fuel flows out past the nut.

The throttle should be in the fully open position.

6 Tighten the pressure line connection.

7 Bleed the other pressure lines in a similar manner, if necessary.

Fuel feed pump strainer — cleaning

DEUTZ

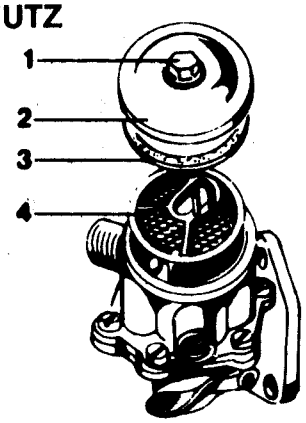

Fig 66 Fuel feed pump

1 Retaining screw
2 Cover
3 Gasket
4 Strainer

1 Loosen the retaining screw (1).

2 Remove the cover (2).

3 Remove the strainer (4) and wash it in diesel fuel.

4 Lubricate the gasket (3) with clean diesel fuel.

5 Assemble in the reverse order.

6 Bleed the fuel system (see the section "Fuel system - bleeding").

Note Start the engine and check that there is no leakage.

Air box — draining

GM

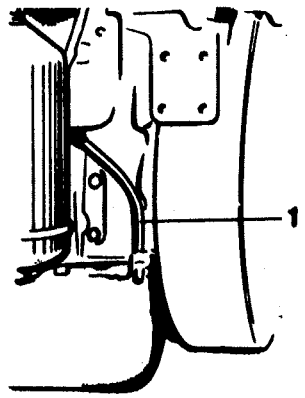

Fig 67 Engine - flywheel housing

1 Drain tube

When the engine is running, check that air blows from the air box drain tube (1).

If the drain tube is blocked:

1 Disconnect the drain tube.

2 Blow it clean with compressed air.

3 Refit the tube.

As a preventive measure, it is recommended that the drain tube be blown clean, even if not blocked and always with the breather pipe removed.

EVERY YEAR

(every 2000 hours of operation)

Hydraulic oil tank — oil change

CAT, DEUTZ & GM

Note The strictest cleanliness is essential when servicing the hydraulic system, to ensure trouble-free operation of the roller.

The hydraulic oil should be changed when the system is hot, i.e. at the end of a shift. Oil flows more freely when it is hot and any impurities will then be well mixed with the oil and they will flow out when the oil is drained.

Draining

CAT, DEUTZ & GM

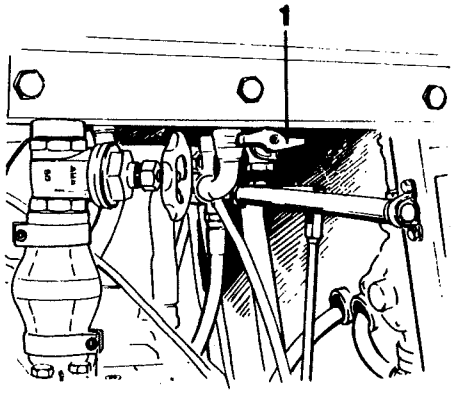

Fig 68 Draining the hydraulic oil tank

1 Drain cock

1 Clean the area around the tank drain plug thoroughly.

2 Obtain a receptacle to hold at least 220 litres (50 US gallons) to collect the oil. An empty oil drum or the like is suitable.

Place the receptacle beside the roller and allow the oil to flow via a hose from the drain plug to the oil drum.

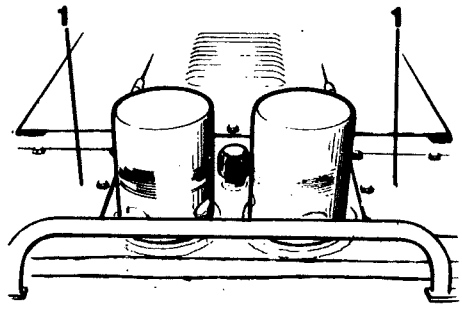

Fig 69 Hydraulic tank

1 Cover plates

3 Clean and remove the cover plates (1) located on the top of the hydraulic oil tank.

Note Take care to prevent impurities from entering the tank.

4 Clean the tank. This is most easily achieved by drawing up the sediment from the bottom of the tank by means of a filter unit. If cloths or brushes are used, they must be completely clean and free from dust and loose ends.

Note If the tank is rinsed out with hydraulic oil, all connections in the bottom of the tank must be plugged to prevent impurities from entering the hydraulic lines. Do not forget to remove these plugs after cleaning.

5 Refit the cover plates. Fit a new gasket and use Loctite sealing compound or its equivalent to ensure a good seal.

Note Ensure that no sealing compound enters the tank.

Filling up – hydraulic oil
CAT, DEUTZ & GM

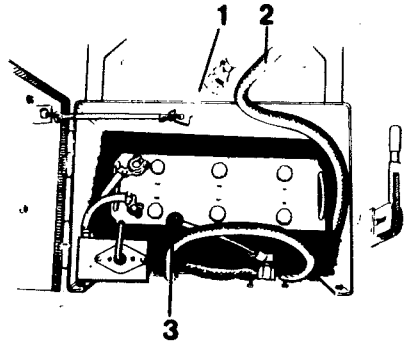

Fig 70 Battery box

1 Protective plug
2 Suction hose
3 Pump lever

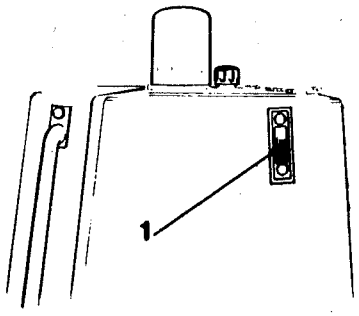

Fig 71 Hydraulic oil tank

1 Sight glass

1 Take the suction hose (2) from the battery box. Unscrew the protective plugs (1) from the hose.

Insert the hose into a drum of new hydraulic oil. Use grade **C** oil as recommended on page 1 under "Lubricants".

2 Operate the pump lever (3) filling the tank to the FULL mark on the sight glass. The tank holds approx. 175 litres (46 US gallons).

Pump the hydraulic oil through a filter into the tank. Always use this procedure when replenishing with new oil.

3 Start the engine and operate the various hydraulic systems.

4 Check the oil level and if necessary, replenish.

GEARBOXES AND REAR AXLE — OIL CHANGE

General

All oil should be changed when it is hot, i.e. at the end of a shift.

Hot oil flows more readily and any impurities will then be well mixed with the oil and will run out when it is drained.

3-speed gearbox — oil change CAT, DEUTZ & GM

⚠ NEVER WORK UNDER THE ROLLER WHEN THE ENGINE IS RUNNING. PARK THE ROLLER ON A LEVEL SURFACE. BLOCK DRUM AND WHEELS.

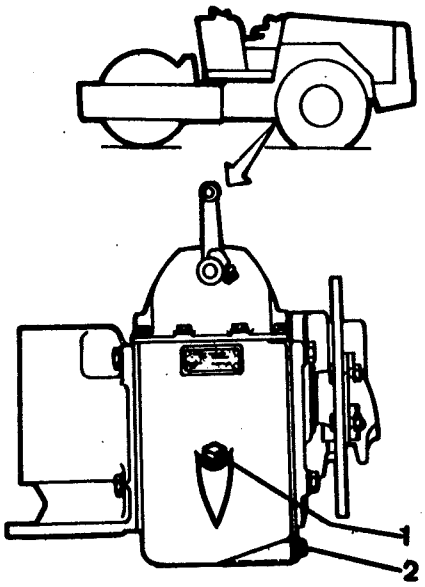

Fig 72 3-speed gearbox

1 Filler/level plug
2 Drain plug

1 Drive the roller onto a level surface and stop the engine.

2 Clean the area around the filler plug (1) and drain plug (2).

3 Place a receptacle to hold about 5 litres (1.3 US gallons) under the drain plug (2).

4 Remove the filler plug (1) and the drain plug (2). Drain the oil into the receptacle.

5 Clean the drain plug and refit it.

The drain plug is magnetic and attracts any magnetic particles in the oil.

6 Replenish with oil, through the filler plug (1) hole, until the oil level reaches the bottom edge of the hole. The gearbox holds approx. 2.8 litres (0.75 US gallons) of oil.

Use grade **D** oil as recommended on page 1 under "Lubricants".

7 Refit the filler plug (1).

Pump drive — oil change
CAT, DEUTZ & GM

⚠ NEVER WORK UNDER THE ROLLER WHEN THE ENGINE IS RUNNING. PARK THE ROLLER ON A LEVEL SURFACE. BLOCK DRUM AND WHEELS.

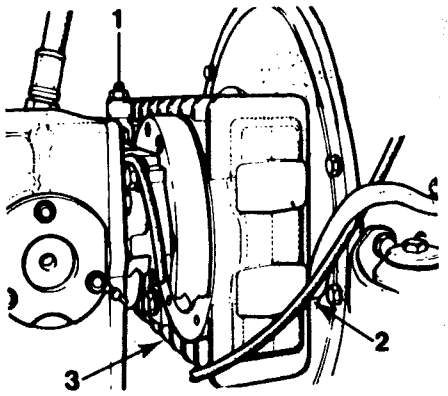

Fig 73 Pump drive

1 Filler plug
2 Level plug
3 Drain plug

1 Drive the roller onto a level surface and stop the engine.

2 Clean the area around the filler plug (1) and the drain plug (3).

3 Place a receptacle to hold about 2 litres (0.5 US gallons) under the drain plug.

4 Remove the filler plug (1).

5 Remove the drain plug (3) and allow the oil to drain into the receptacle.

6 Clean the drain plug and, when the oil has drained, refit it.

7 Loosen the level plug (2) a few turns.

8 Fill up with oil until it flows out at the level plug hole. Use grade **D** oil as recommended on page 1 under "Lubricants". The capacity of the gearbox is approx. 1.5 litres (0.4 US gallons).

9 Screw in the level plug (2) and refit the filler plug (1).

Rear axle planetary gears — oil change
Draining the oil
CAT, DEUTZ & GM

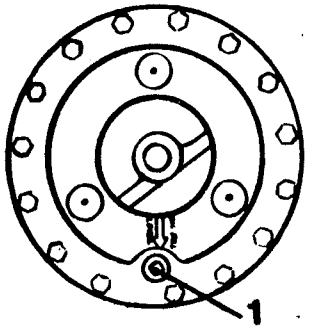

Fig 74 Planetary gear - draining the oil

1 Drain/level plug

1 Drive the roller onto a level surface so that the drain plug (1) is at the lowest position. Stop the engine.

2 Clean the area around the drain plug (1).

3 Place a receptacle to hold about 2 litres (0.5 US gallons) under the drain plug.

4 Remove the drain plug (1). Collect the oil in the receptacle.

5 Clean the drain plug and refit it, when all the oil has been drained.

Drain the oil in the other planetary gear according to 1-5 above.

Rear axle planetary gears — replenishing CAT, DEUTZ & GM

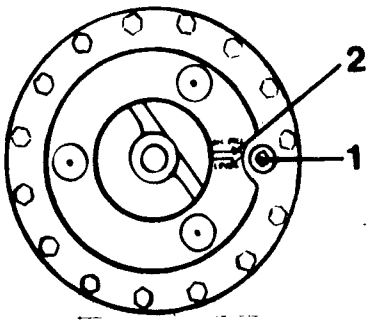

Fig 75 Planetary gear - replenishing with oil

1 Filler/level plug
2 Level mark

1 Drive the roller so that the mark (2) on the planetary gear housing is horizontal. Loosen the plug (1).

2 Replenish with oil through the level plug (1) hole until the oil level reaches the bottom edge of the hole.

Use grade **D** oil as recommended on page 1 under "Lubricants".

Each planetary gear holds approx. 1.4 l (0.4 US gallon) of oil.

3 Refit the level plug (1).

4 Change the oil in the other rear axle planetary gear in the same manner.

Rear axle differential — oil change CAT, DEUTZ & GM

⚠ NEVER WORK UNDER THE ROLLER WHEN THE ENGINE IS RUNNING. PARK THE ROLLER ON A LEVEL SURFACE. BLOCK DRUM AND WHEELS.

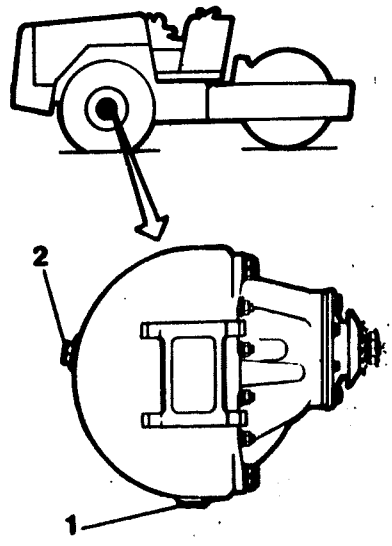

Fig 76 Differential

1 Drain plug
2 Filler/level plug

1 Drive the roller onto a level surface and stop the engine.

2 Clean the area around the drain plug (1) and the filler plug (2).

3 Place a receptacle to hold approx. 15 litres (4 US gallons) under the drain plug.

4 Remove the filler plug and the drain plug. Collect the oil in the receptacle.

5 Clean the drain plug and refit it, when all oil has drained.

6 Replenish with oil through the filler plug hole until the oil level reaches the bottom edge of the hole. The differential holds approx. 12.8 litres (3.4 US gallons) of oil.

Use grade **D** oil as recommended on page 1 under "Lubricants".

7 Refit the filler plug.

Engine — flushing the coolant system
CAT & GM

⚠ WARNING! AT OPERATING TEMPERATURE THE COOLANT IS HOT AND PRESSURISED. IF THE RADIATOR CAP IS REMOVED QUICKLY, COOLANT WILL FLOW OUT IN THE FORM OF STEAM AND MAY CAUSE SCALDING. USE GLOVES AND PROTECTIVE GOGGLES.

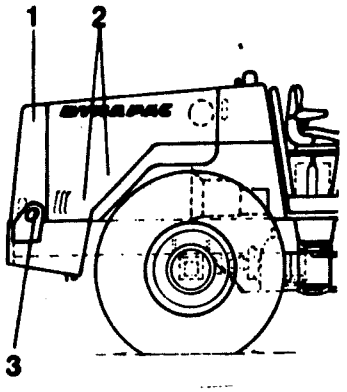

Fig 77 Draining the cooling system

1 Filler cap
2 Drain plugs
3 Drain cock - radiator

The cooling system should be cleaned once a year, to flush out rust and sediment.

The coolant must also be changed once a year, as the corrosion inhibitor looses its effectiveness. The cooling system should be cleaned when the engine is cold.

1 Drive the roller onto a level surface.

2 Remove the radiator filler cap (1).

3 Open the drain cock (3) at the bottom of the radiator.

4 Remove the drain plugs (2) in the cylinder block and on the engine oil cooler.

On CAT engines, the cock/plugs are located:

- One at the bottom connection to the radiator
- Two in the cylinder block - one on each side, near the flywheel casing.
- One on the engine oil cooler (underneath).

On GM engines, the plugs are located:

- One between the fuel filters
- One on the engine oil cooler (underneath).

5 Flush the cooling system with clean water. Insert a hose into the radiator filler neck and flush the system with water until the water flowing out at the drain plug holes is completely free from rust and sediment.

Note If there are hard deposits of lime or rust in the cooling system, the system may be cleaned using a special radiator cleansing agent. Use a good cleansing agent from a reputable manufacturer and follow the manufacturer's instructions. See also CAT instructions GEG 051 00-01 and GM instructions PC 9402-74.

6 Refit the drain plugs and close the radiator drain cock.

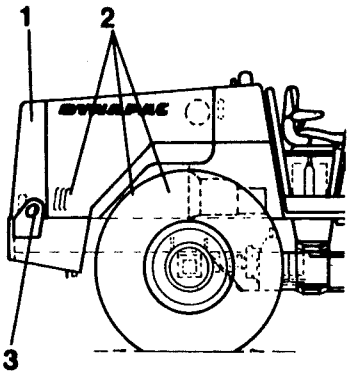

Fig 78 Draining the GM cooling system

1 Filler cap
2 Drain plugs
3 Drain cock - radiator

7 Inspect the coolant hoses. Replace hoses that are cracked or show any other signs of defect.

8 Fill up with coolant to the level tab in the radiator.

The lime content of the water should be as low as possible.

Always fill the cooling system with one of the following two coolants:

- Clean water and corrosion inhibitor (CAT 3P2044 or its equivalent).
- 50% clean water and 50% anti-freeze (containing a corrosion inhibitor).

9 Start the engine and run it for 10 minutes.

10 Check the level of the coolant and, if necessary, replenish to the correct level.

11 Ensure that the cooling system does not leak. Ensure that any leaks are sealed.

12 Refit the filler cap.

SPECIAL INSTRUCTIONS

When it is delivered from the factory, the roller is filled with the standard oils specified in the table below. Brand names are used as examples in specifying lubricants, in all eases equivalent lubricants may be used.

STANDARD OILS SUPPLIED AND OTHER RECOMMENDED OILS

If the roller is to be used in areas where the ambient temperature may be above the "upper temperature, °C", "special oil" as specified in the table below must be used.

Before using the roller at extremely low ambient temperatures, read the explanatory notes below.

Explanetory notes

The tabulated temperature limits apply to the individual "systems" or to the individual components and refer to the limits for the lubricating properties of each oil.

The "MAXIMUM OPERATING TEMPERATURE" of the roller may be different from the ambient temperature. Contact DYNAPAC for additional recommendations before operating the roller under extremely hot or cold conditions.

The temperature limits tabulated below apply to standard models.

It may be necessary to check temperature gauges continually if the machine is working in the upper temperature ranges when fitted with accessories, such as noise-damping equipment.

Temperatures in °C (°F)

	"Standard oil"	"Special oil"	"Standard oil" (Min. API GL5)	"Special oil"
	SHELL TELLUS Oil T 68	SHELL TELLUS Oil T 100	SHELL SPIRAX SAE 90 HD	SHELL SPIRAX SAE 140 HD
Hydr. oil tank	-10 +40 (14) (104)	0 +50 (132) (122)		
Drum			-15 +40 (5) (104)	+5 +50 (41) (122)
Pump drive			-15 +35 (5) (95)	+5 +50 (41) (122)
Rear axle compl & 3-speed gearbox			-15 +35 (5) (95)	+5 +50 (41) (122)
Torque hub			-15 +40 (5) (104)	+5 +50 (41) (122)

Engine oils
CAT, DEUTZ

Engine oils in accordance with "for API Service CD/SE, SAE 10 W/30", such as Shell Rimula X Oil 10 W/30, should be used under normal conditions.

GM

Engine oils in accordance with "for API Service CD/SE, SAE 30", such as Shell Engine Oil 1306, should be used under normal conditions.

Corresponding instructions issued by engine manufacturers should be regarded as having preference over the above instructions.

INSTRUCTIONS FOR LONG-TERM PARKING

Applicable to rubber-coated drums.

If the roller is parked for a long time, i.e. longer than a month, there is some risk of damaging the rubber coating on the drum by deforming it.

To prevent such damage, support the drum frame so that the drum is clear of the ground. The frame may be lifted using a jack or similar aid and the frame must be rested on robust supports.

Alternatively, the roller may be moved at regular intervals and parked so that the line of contact between the drum and the ground is changed from time to time.

The small deformations in the rubber coating resulting from parking for a short period are rolled out when the roller is used.