

# OPERATION

# CA 15

VIBRATORY ROLLER

Diesel engine: Deutz F4L 912  
HURTH

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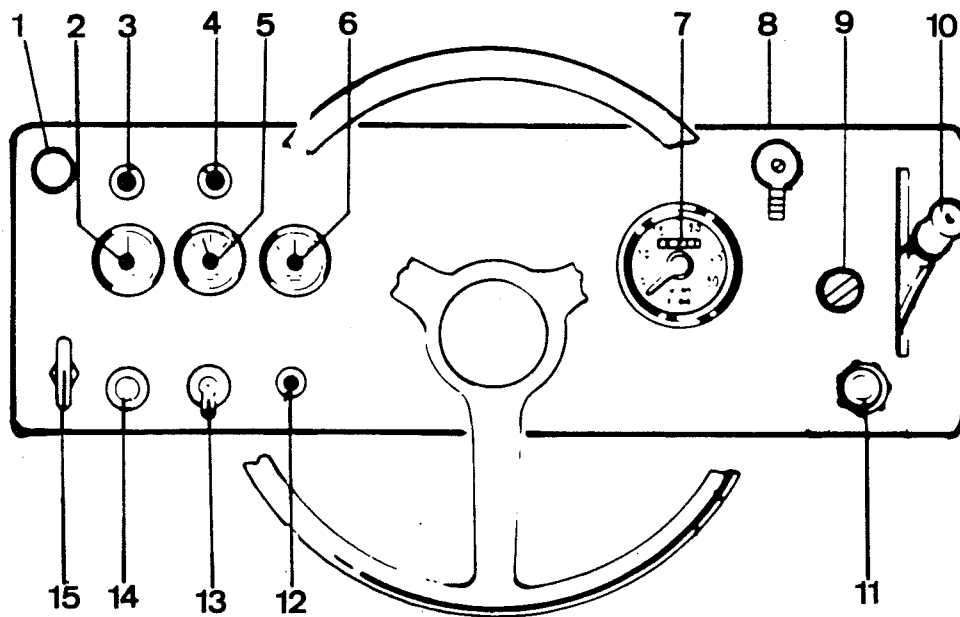


Fig 1 Controls, instruments

- |                                    |                                 |
|------------------------------------|---------------------------------|
| 1 Emergency stop                   | 8 Starter switch                |
| 2 Ammeter                          | 9 High/low speed                |
| 3 Battery charging lamp            | 10 Forward/reverse control      |
| 4 Brake warning lamp               | 11 Throttle                     |
| 5 Fuel gauge                       | 12 Oil pressure warning lamp    |
| 6 Temperature gauge, hydraulic oil | 13 Amplitude selector, HIGH/LOW |
| 7 Tachometer                       | 14 Signal                       |
|                                    | 15 Stop control                 |

## DYNAPAC

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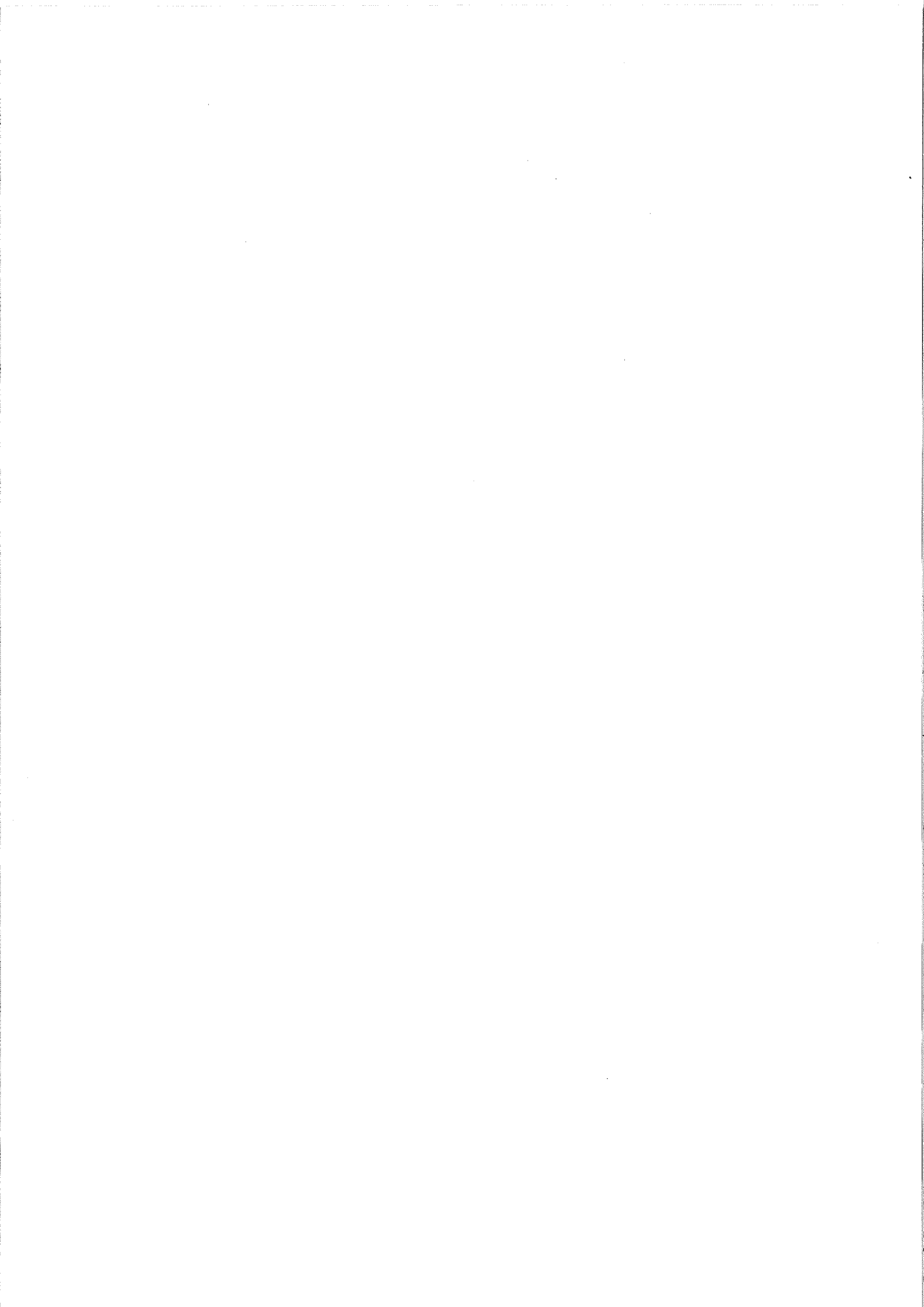




## SAFETY PRECAUTIONS



1. READ AND UNDERSTAND OPERATOR'S MANUAL BEFORE START UP.
2. OBSERVE AND FOLLOW ALL MAINTENANCE AND SERVICE INSTRUCTIONS.
3. DO NOT OPERATE MACHINE UNLESS QUALIFIED BY TRAINING OR EXPERIENCE.
4. DO NOT OPERATE MACHINE IF IN NEED OF REPAIR OR ADJUSTMENT.
5. OBEY ALL SAFETY RULES.
6. VISUALLY INSPECT FOR GROUND HAZARDS.
7. TEST ALL CONTROLS, BRAKES AND STEERING BEFORE WORKING.
8. BEFORE START UP:
  - PLACE FORWARD/REVERSE CONTROL IN NEUTRAL
  - BE FIRMLY AND SECURELY SEATED AT CONTROLS.
9. USE CAUTION ON UNEVEN SURFACES AND ROUGH TERRAIN.
10. LOOK BOTH WAYS WHEN REVERSING.
11. NO RIDERS ALLOWED.
12. DO NOT GET ON OR OFF MOVING MACHINE; ALWAYS USE PROPER STEPS AND HAND GRIPS.
13. BEFORE LEAVING ROLLER, ADJUST AND SET TRAVEL LEVER IN NEUTRAL, VIBRATION OFF, ENGINE OFF.
14. KEEP MACHINE CLEAN; AVOID DIRT AND GREASE ON OPERATOR PLATFORM.
15. KEEP ALL OPERATION PLATES AND DECALS CLEAN AND READABLE.
16. BLOCK DRUM/WHEELS AND FASTEN STEERING LOCK WHEN SERVICING OR REPAIRING MACHINE.
17. EXERCISE CAUTION WHEN FUELLING MACHINE:
  - SHUT DOWN ENGINE
  - NO SMOKING
  - GROUND FILLER AGAINST TANK NECK TO AVOIDS SPARK.
18. DO NOT MODIFY THIS MACHINE IN ANY WAY WHICH WILL AFFECT SAFETY. ALL MODIFICATIONS REQUIRE WRITTEN APPROVAL FROM DYNAPAC.



## BEFORE STARTING

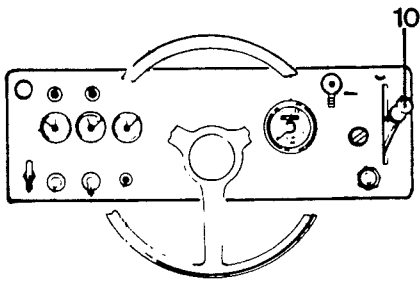


Fig 2 Forward/reverse lever

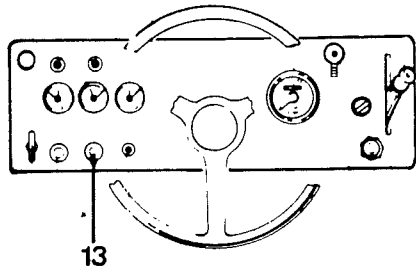
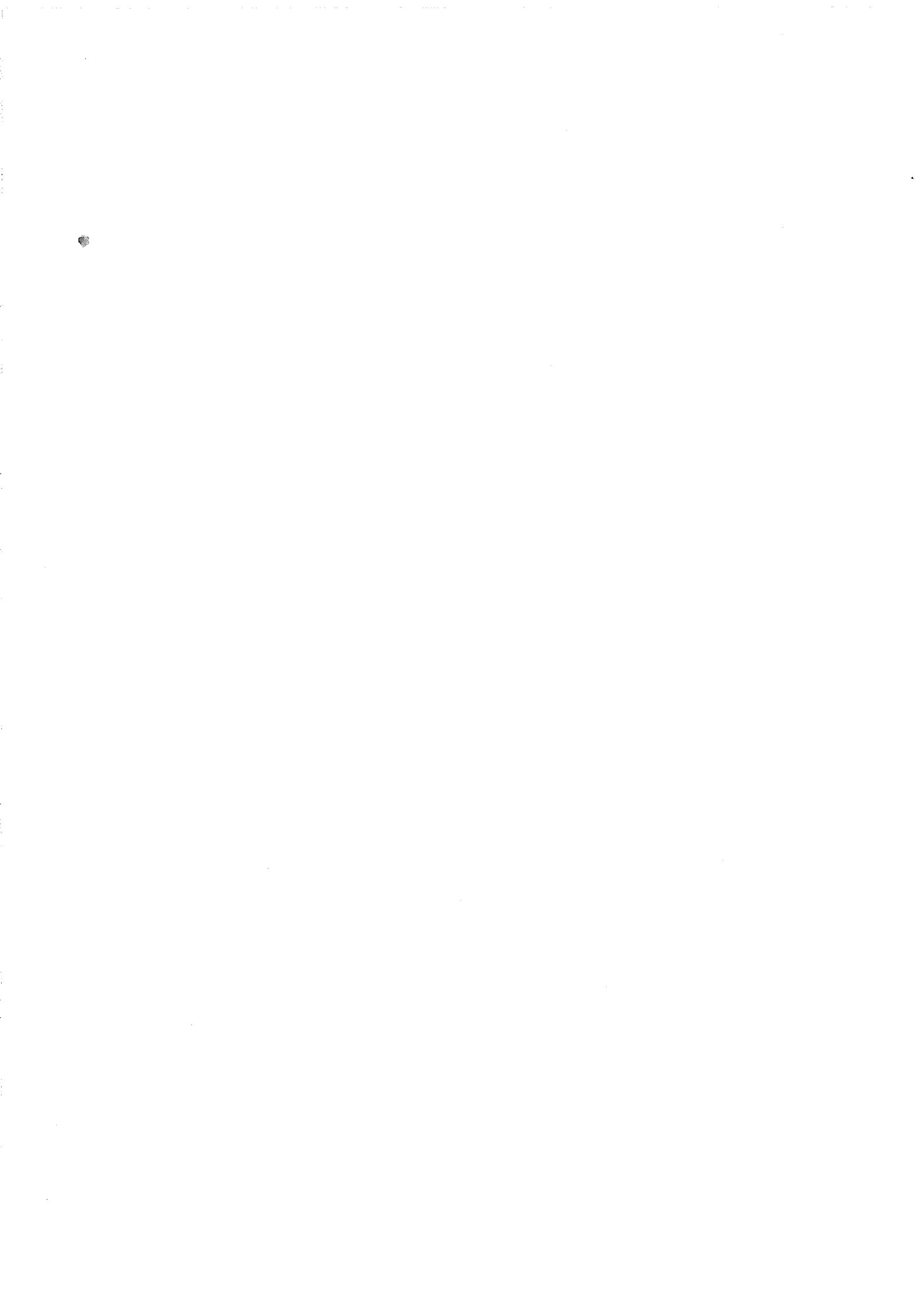


Fig 3 Amplitude selector

- 1 Check that the daily maintenance has been carried out (see the Maintenance Instructions).
- 2 Move the forward/reverse lever (10) to the neutral position. The engine cannot be started when the lever is in any other position.

- 3 Move the amplitude selector (13) to the neutral position.



## STARTING

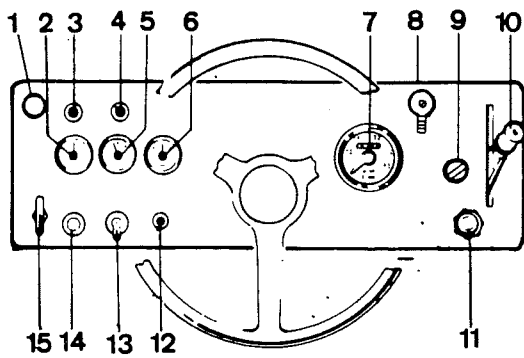


Fig 4

- 3 Battery charging lamp
- 4 Handbrake warning lamp
- 5 Fuel gauge
- 6 Hydraulic oil temperature gauge
- 7 Tachometer
- 8 Starter switch
- 10 Forward/reverse lever
- 11 Throttle
- 12 Oil pressure warning lamp
- 13 Amplitude selector
- 15 Stop control

- 1 Check that the stop control (15) has been pushed fully home and that the amplitude selector (13) is in the "0" position.
- 2 Pull out the throttle (11) to about 1/3 full throttle.
- 3 Turn the starter switch (8) to the "ON" position.

Check that the hydraulic oil temperature gauge (6) and fuel gauge (5) indicate readings and that the oil pressure warning lamp (12), the battery charging lamp (3) and the handbrake warning lamp (4) light up.

If the horn sounds, move the forward/reverse lever (10) to the neutral position to silence it.

- 4 Depress and turn the starter switch (8) to the "START" position. As soon as the engine fires, release the starter switch, which will return automatically to the "ON" position.

NOTE If the engine does not start, pause briefly before attempting to start it again.

When starting the engine at temperatures below +4°C (40°F), a small amount of starter gas may be sprayed into the air cleaner before starting.

- 5 Run the engine at 800 - 1 000 rpm (7) for 2 - 10 min, depending on the air temperature, to warm it up.
- 6 While warming up the engine, check that the battery charging lamp (3) and the oil pressure warning lamp (12) do not light up.





## DRIVING

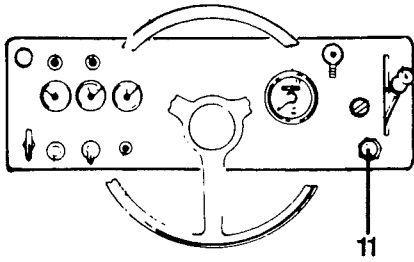


Fig 5 Throttle

- 1 Open the throttle (17) until the engine is running at a speed of 2 400 rpm.

Ensure that the steering performs correctly, by turning the steering wheel once to the right and once to the left while the machine is stationary.

- 2 Set the High/low speed (5) to the desired position (see the sticker).

Low 1 - working position  
High 2 - transport position

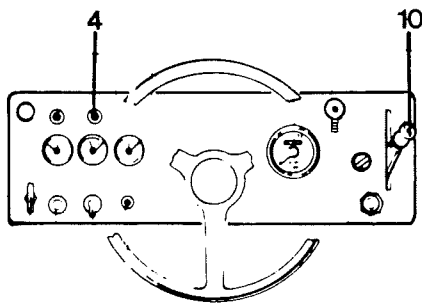
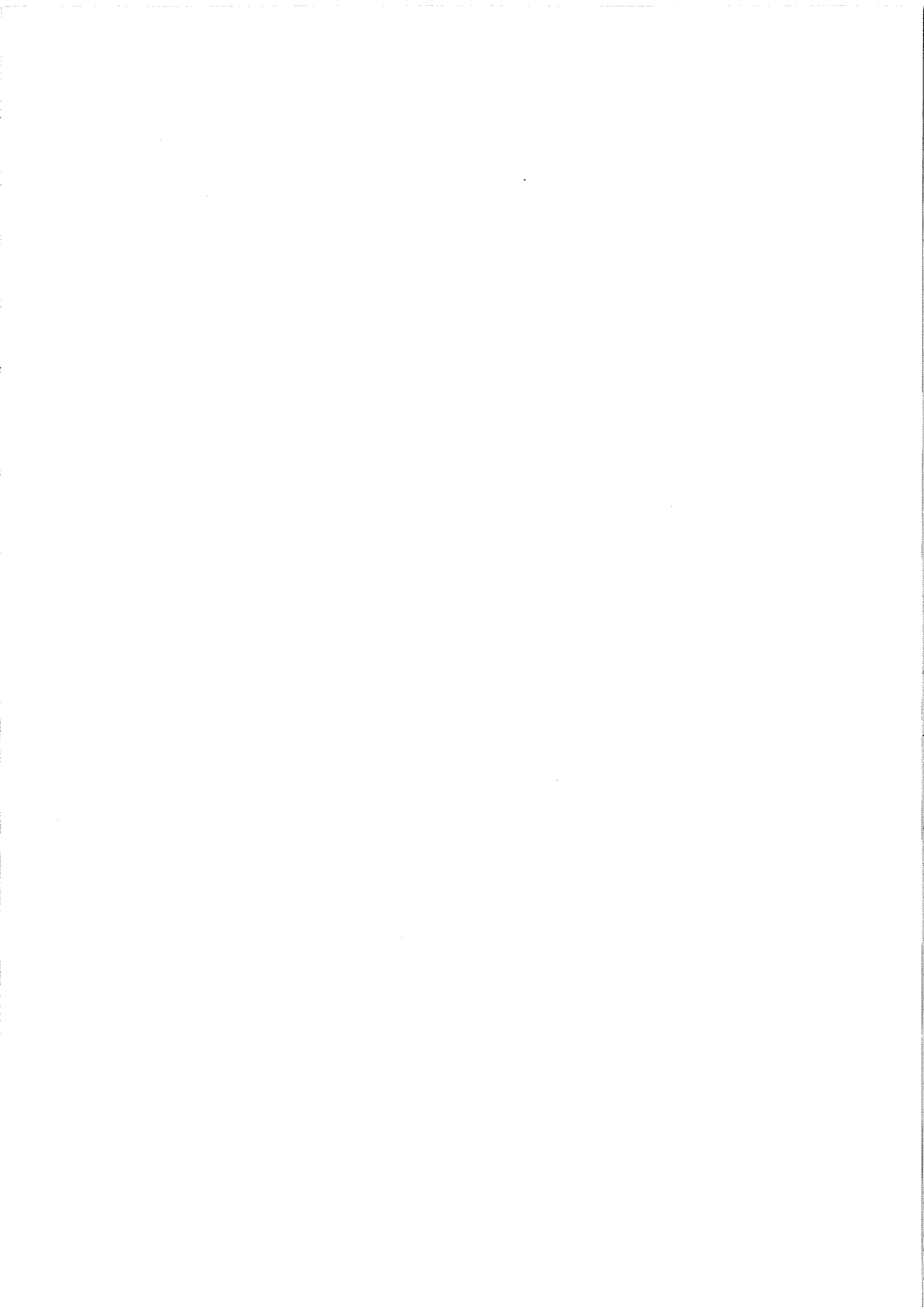


Fig 6

- 4 Hand brake warning lamp
- 10 Forward/reverse lever

The machine speed should be adjusted by means of the forward/reverse lever (10), which is also the normal brake for stopping the machine.



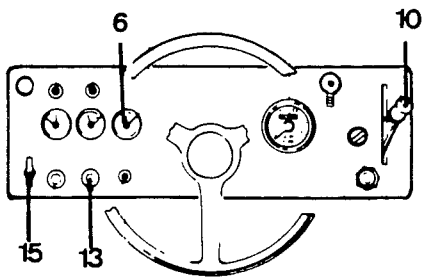


Fig 7

- 6 Hydraulic oil temperature gauge
- 10 Forward/reverse lever
- 13 Amplitude selector
- 15 Stop control

- 4 Move the forward/reverse lever (10) to the desired direction of travel. Control the speed of the machine with this lever. The machine will be stopped by moving this lever to the "NEUTRAL" position.
- 5 While driving, check that the gauge readings are normal and that the warning lamps do not light up. The maximum hydraulic oil temperature (6) should not exceed approximately 82°C (approx. 185°F).

## BRAKING

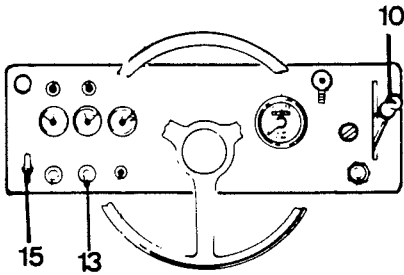


Fig 8 Forward/reverse lever

### Normal braking while driving

The machine is normally braked using the forward/reverse lever (10). The hydrostatic transmission will slow down the rear wheels when the lever is moved to the "NEUTRAL" position.

## STOPPING

See Fig 8 above.


- 1 Set the amplitude selector (13) to the "0" position.
- 2 Move the forward/reverse lever (10) to the "NEUTRAL" position.
- 3 Run the engine at idling speed for about 5 minutes to allow the engine temperature to fall.
- 4 Pull out the stop control (15) to stop the engine.



## PARKING

If the machine is parked on an incline, use a stone or suchlike to chock the drum.

For long-term parking of machines fitted with rubber-coated drums (CA 15R), see the Maintenance Instructions.

 NEVER LEAVE THE MACHINE WITH THE ENGINE RUNNING.

## VIBRATION/DRIVING

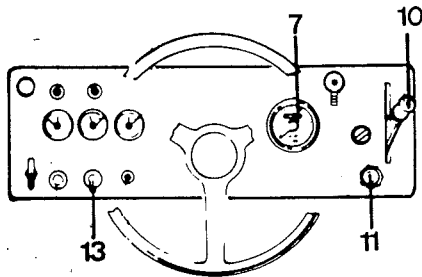


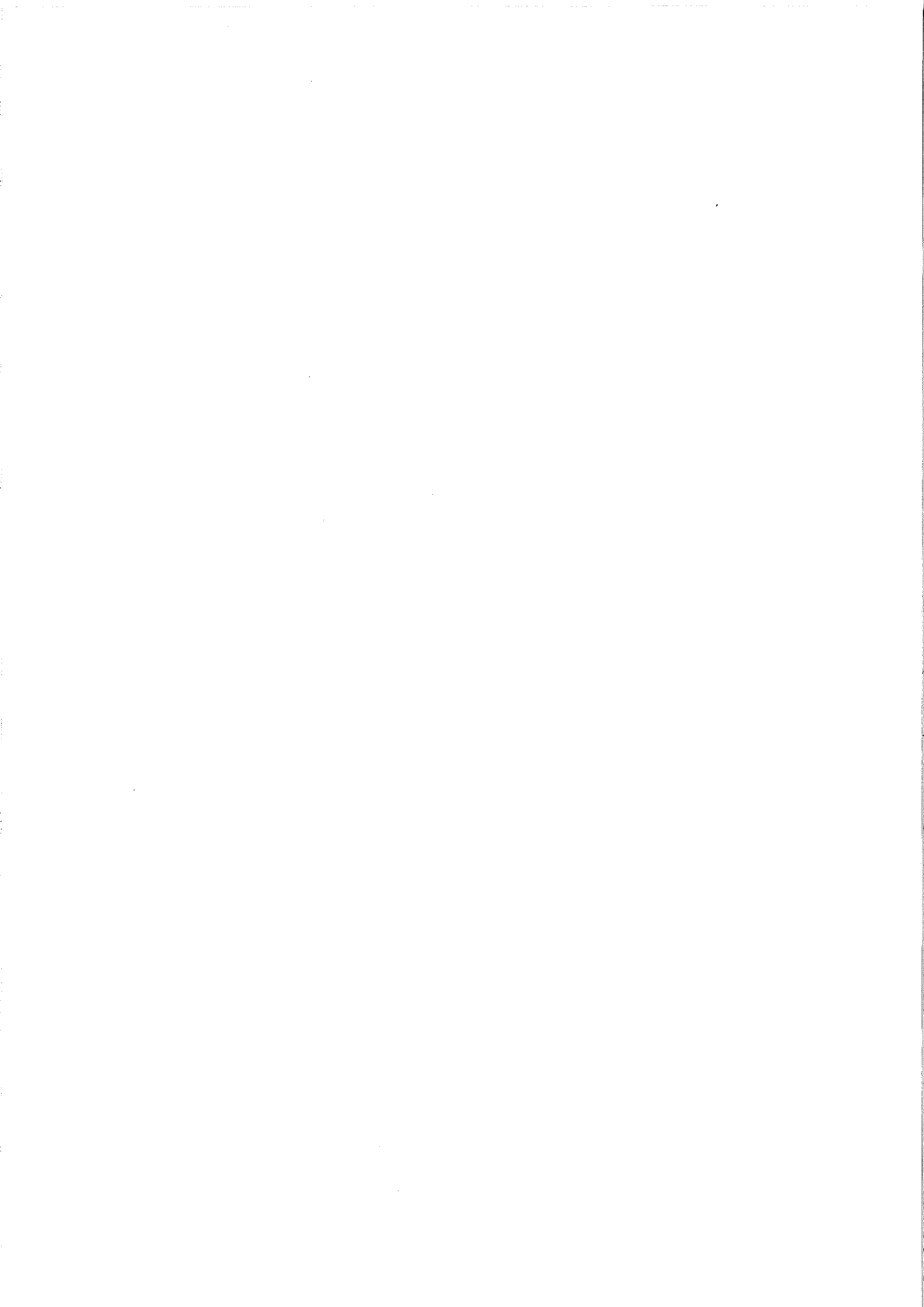
Fig 9

- 7 Tachometer
- 10 Forward/reverse lever
- 11 Throttle
- 13 Amplitude selector

- 1 Check that the amplitude selector (13), is in the "0" position.
- 2 Start the engine. Adjust the throttle (11) until the tachometer (7) reads 2 400 rpm. Carry out fine adjustment of the speed by turning the upper part of the throttle.
- 3 Move the forward/reverse lever (10) to the desired direction of travel and control the speed of the machine with this lever.
- 4 When driving on asphalt, switch on the sprinker system (only on the CA 15A).
- 5 Use the amplitude selector (13) to engage vibration when the machine is in motion. If the engine speed drops, increase it to 2 400 rpm.

The vibration may be set at high or low amplitude. Use the vibration control/amplitude selector (13) to change from high to low or vice versa.

NOTE Never move the amplitude selector between HIGH and LOW amplitude when the vibration switch is on - wait until vibration has stopped before changing the setting.



## LIFTING INSTRUCTIONS BEFORE LIFTING

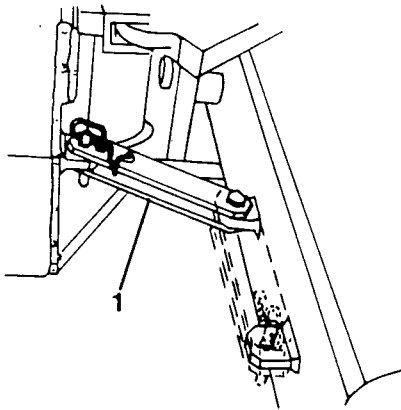


Fig 10 Locking arm for the articulated joint

1 Locking arm

The front and rear frames must be locked when lifting the machine, to prevent turning about the articulated joint.

- 1 Run the machine onto a flat surface, with the front and rear frames in line.
- 2 Stop the engine.
- 3 Use the locking arm (1) to lock the machine frame.

## LIFTING

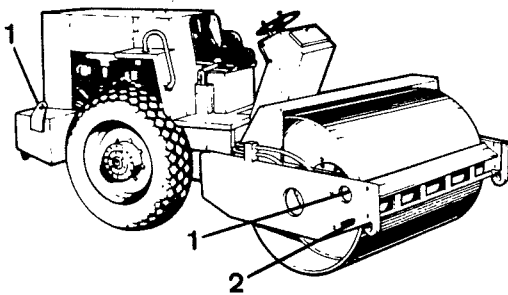



Fig 11 Lifting instructions

1 Lifting points  
2 Plate showing the weight

- 4 Fit the lifting tackle in the lifting apertures (1). The location of the lifting holes and the weight of the machine are marked on the plate (2) on the right-hand side of the machine.
- 5 Note that the lifting tackle used must be designed to conform to the regulations currently in force.

Machine weight: 6 000 kg

 NEVER WALK UNDER A SUSPENDED LOAD!

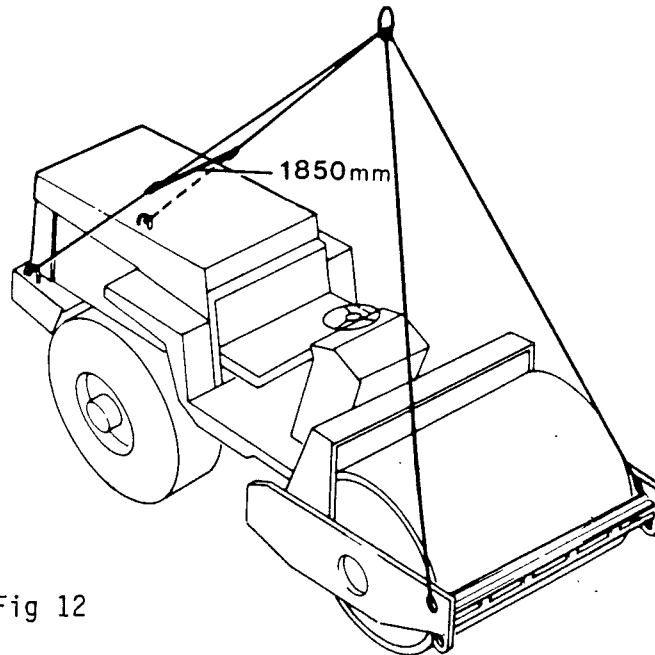


Fig 12

## USING THE ROLLER AFTER LIFTING

After lifting has been completed, return the locking arm to its original position on the front frame (see Fig 10).





# MAINTENANCE

# CA 15

VIBRATORY ROLLER

Diesel engine: Deutz F4L 912  
Wheel axle HURTH

870814

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READ THROUGH THESE INSTRUCTIONS CAREFULLY BEFORE STARTING ANY SERVICE WORK

Correct maintenance is essential to ensure that the machine will give many years of satisfactory service, so these instructions should therefore be carefully followed.

Keep the engine instruction manual available as well.

## LUBRICANTS

A B C and D 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.

### (B) ENGINE OIL

API service CD/SE, SAE 10W/30

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

Air temperature	Viscosity
-10°C - +30°C	SAE 10W/30
-10°C - +50°C	SAE 15W/40

### (C) HYDRAULIC OIL

with anti-wear additive - Shell Tellus oil T 68

### (D) LUBRICATING OIL

SAE 80/90 HD (API, GL-5, limited slip)

## Note

If the roller is to be used under exceptionally hot or cold conditions, get in touch with DYNAPAC for supplementary lubrication recommendations.

# DYNAPAC

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# MAINTENANCE SCHEDULE

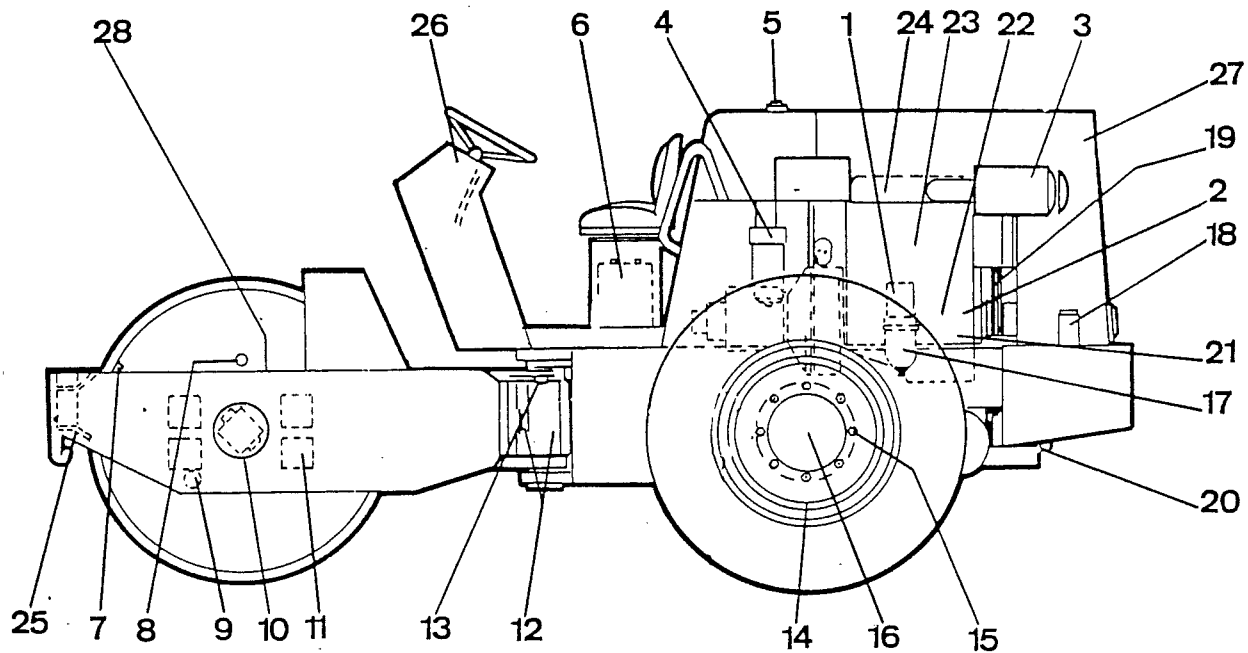


Fig 1 Maintenance schedule

- |   |   |
|---|---|
| 1 Fuel filter - diesel engine           | 14 Tyre pressures                         |
| 2 Diesel engine - oil filling           | 15 Wheel nuts                             |
| 3 Air cleaner                           | 16 Rear axle                              |
| 4 Hydraulic oil filter                  | 17 Diesel engine - engine oil filter      |
| 5 Hydraulic oil filling                 | 18 Fuel tank - filler pipe                |
| 6 Battery                               | 19 V-belts                                |
| 7 Indicating pin (Drum oil level check) | 20 Fuel tank - drain plug                 |
| 8 Drum oil - filling                    | 21 Fuel feed pump - diesel oil            |
| 9 Drum oil - sight glass                | 22 Injection pump                         |
| 10 Drum bearing                         | 23 Engine - cooling fins                  |
| 11 Shock absorbers and mounting screws  | 24 Engine - valves                        |
| 12 Articulated joint                    | 25 Scrapers                               |
| 13 Steering cylinders (two)             | 26 Controls/Instrument                    |
|   | 27 Hydraulic oil cooler                   |
|   | 28 Torque hub (only on D and PD machines) |



**EVERY DAY (every 10 hours of operation)**

25 ...	Scraper setting - adjust .....	6	
1 ...	Engine oil level - check .....	6	..... B
4 ...	Oil level in the hydraulic oil tank - check .....	6	..... C
18 ...	Fuel tank - replenish .....	7	
- ...	Sprinkler - check (only on A models) .....	7	

**EVERY WEEK (every 50 hours of operation)**

2 ...	Engine oil - change* .....	16	..... B
17 ...	Engine oil filter* - replace .....	17	
3 ...	Air cleaner filter element - clean. Hoses and connections inspect for leakage .....	8	
5 ...	Hydraulic tank breather hole - check .....	9	
6 ...	Battery - check .....	9	
9 ...	Drum oil level - check .....	10	..... D
11 ...	Shock absorbers and mounting screws - check .....	10	
12 ...	Articulated joint - grease .....	11	..... A
13 ...	Steering cylinder mountings - grease .....	11	..... A
14 ...	Tyre pressures - check .....	12	
15 ...	Wheel nuts - check .....	12	

**EVERY 14 DAYS (every 100 hours of operation)**

22 ...	Injection pump oil level - check .....	13	..... B
23 ...	Engine cooling fins - clean .....	13	
27 ...	Hydraulic oil cooler - clean the exterior .....	13	
19 ...	Alternator and fan V-belt tension - check .....	14	
19 ...	V-belt monitor - check .....	14	
28 ...	Torque hub oil level (only on P and PD machines) - check .....	15	..... D

\* Only in the case of newly reconditioned engines



# MAINTENANCE SCHEDULE

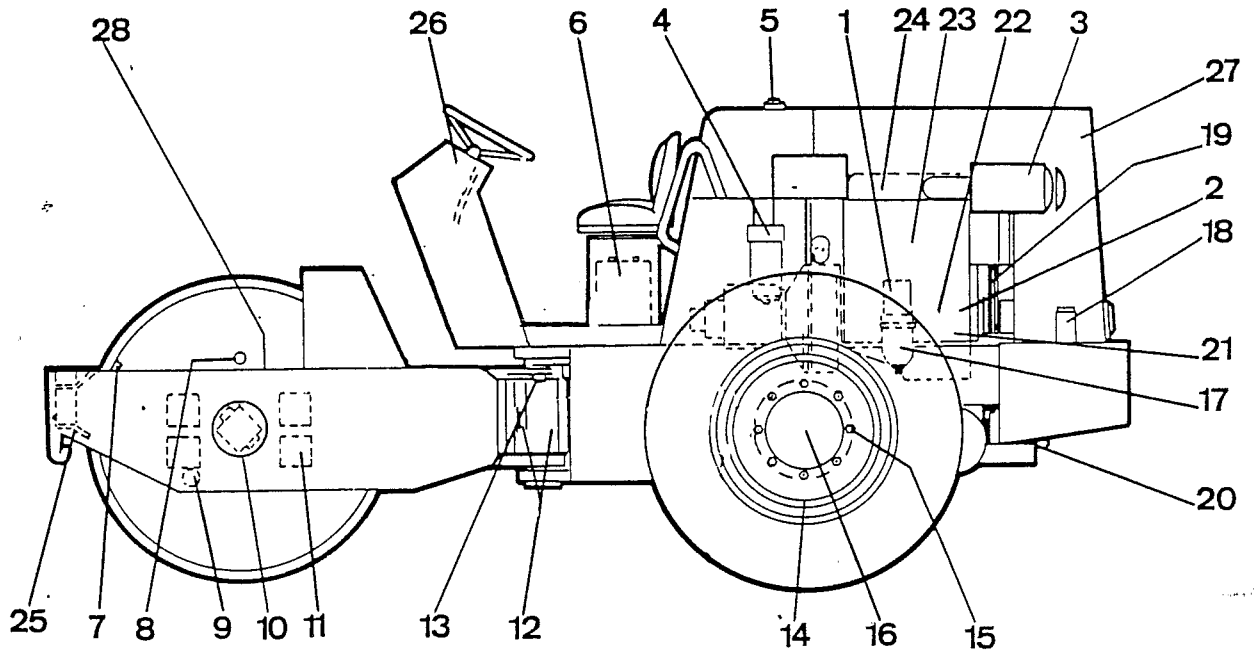
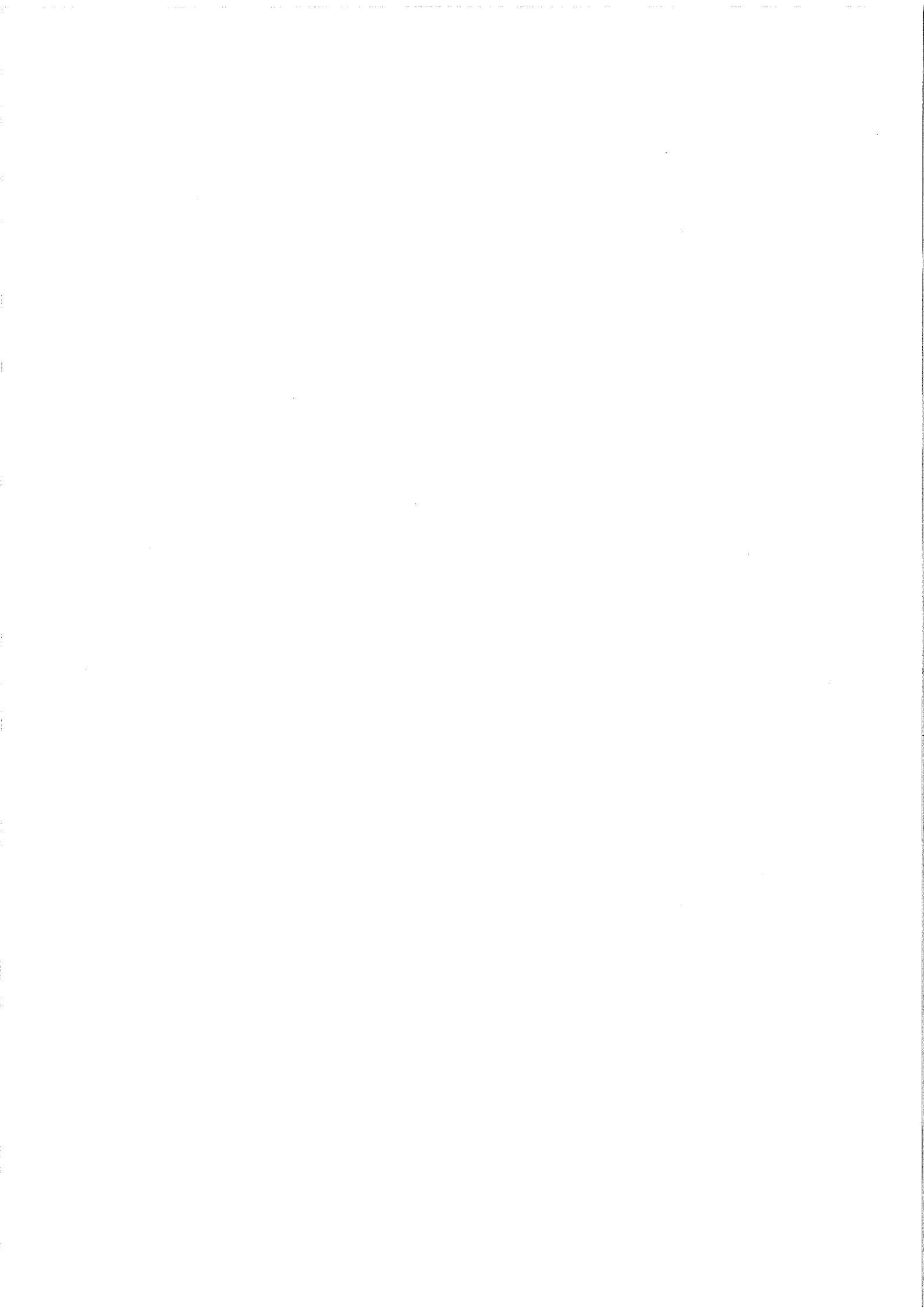


Fig 1 Maintenance schedule

- |   |   |
|---|---|
| 1 Fuel filter - diesel engine           | 14 Tyre pressures                         |
| 2 Diesel engine - oil filling           | 15 Wheel nuts                             |
| 3 Air cleaner                           | 16 Rear axle                              |
| 4 Hydraulic oil filter                  | 17 Diesel engine - engine oil filter      |
| 5 Hydraulic oil filling                 | 18 Fuel tank - filler pipe                |
| 6 Battery                               | 19 V-belts                                |
| 7 Indicating pin (Drum oil level check) | 20 Fuel tank - drain plug                 |
| 8 Drum oil - filling                    | 21 Fuel feed pump - diesel oil            |
| 9 Drum oil - sight glass                | 22 Injection pump                         |
| 10 Drum bearing                         | 23 Engine - cooling fins                  |
| 11 Shock absorbers and mounting screws  | 24 Engine - valves                        |
| 12 Articulated joint                    | 25 Scrapers                               |
| 13 Steering cylinders (two)             | 26 Controls/Instrument                    |
|   | 27 Hydraulic oil cooler                   |
|   | 28 Torque hub (only on D and PD machines) |





Item in Fig 1	Operation	Page	Lubricants see Page 1
---------------	-----------	------	-----------------------

**EVERY MONTH (every 200 hours of operation)**

4 ...	Hydraulic oil filter - replace .....	16	
2 ...	Engine oil - change .....	16	..... B
17 ...	Engine oil filter - replace .....	17	
- ...	Strainer in the water tank (only on A machines) - clean .	17	
24 ...	Engine valve clearances - check .....	**	
3 ...	Air cleaner rubber valve - clean .....	18	
- ...	Lubricate the engine controls .....		..... B
16 ...	Oil level in the rear axle planetary gears - check .....	19	..... D
16 ...	Oil level in the rear axle differential - check .....	19	..... D

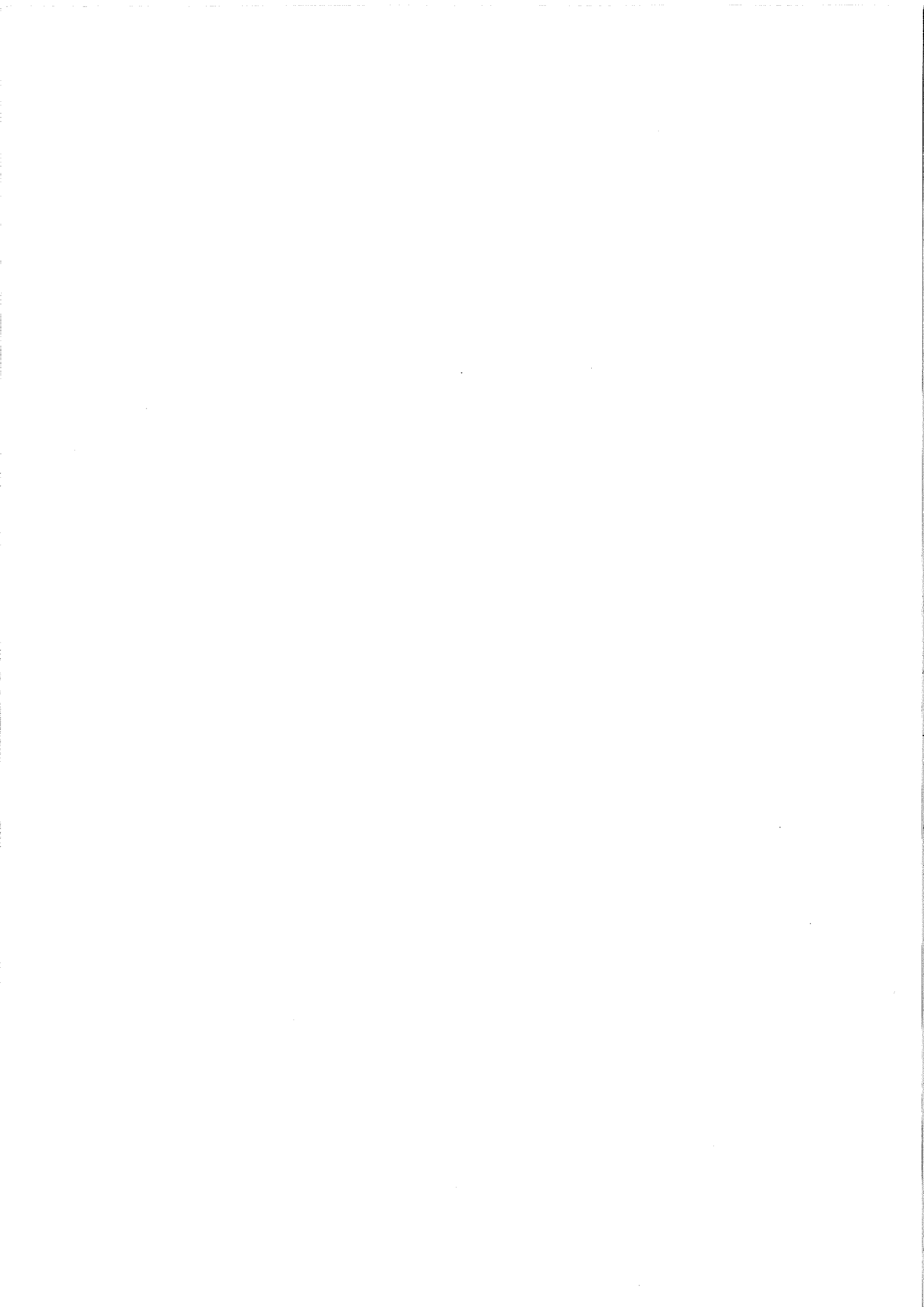
**EVERY SIX MONTHS (every 1000 hours of operation)**

1 ...	Fuel filter - replace .....	20	
1 ...	Fuel system bleed .....	20	
21 ...	Feed pump strainer - clean .....	21	
28 ...	Torque hub oil (only on D and PD machines) - change .....	21	..... D
8 ...	Drum oil - change .....	22	..... D
20 ...	Fuel tank - drain .....	22	

**EVERY YEAR (every 2000 hours of operation)**

5 ...	Hydraulic oil tank oil - change .....	23	..... C
16 ...	Rear axle planetary gear oil - change .....	25	..... D
16 ...	Rear axle differential oil - change .....	25	..... D
- ...	Water tank (only on A machines) - drain and clean .....	26	

\*\* Refer to the engine instruction manual



## EVERY DAY

(every 10 hours of operation)

### Scrapers — adjusting

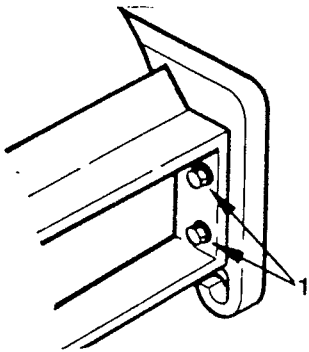


Fig 2 Scraper

1 Mounting screws

Adjust the scraper setting as follows:

- 1 Loosen all four mounting screws (1).
- 2 Set the scraper approx. 10 cm away from the drum.
- 3 Retighten the mounting screws.

### Engine — checking the oil level

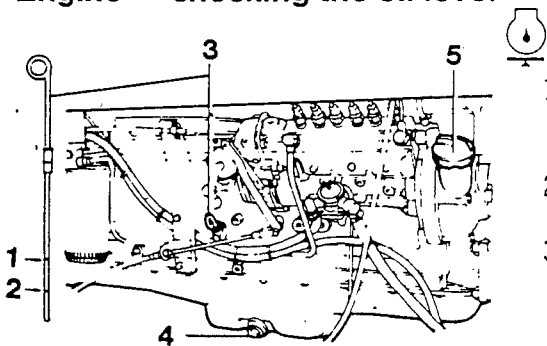


Fig 3 Checking the engine oil level

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

- 1 Drive the machine onto a level surface and switch off the engine.
- 2 Remove the dipstick (3) and check the level.
- 3 If the level is close to the lower mark (2), replenish with grade B oil as recommended on page 1 under "Lubricants".

### Hydraulic tank — checking the oil level

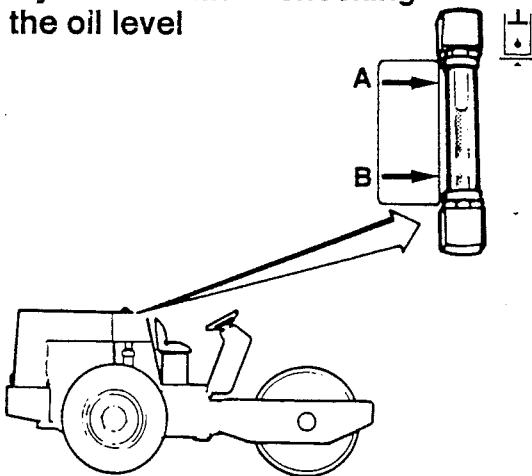
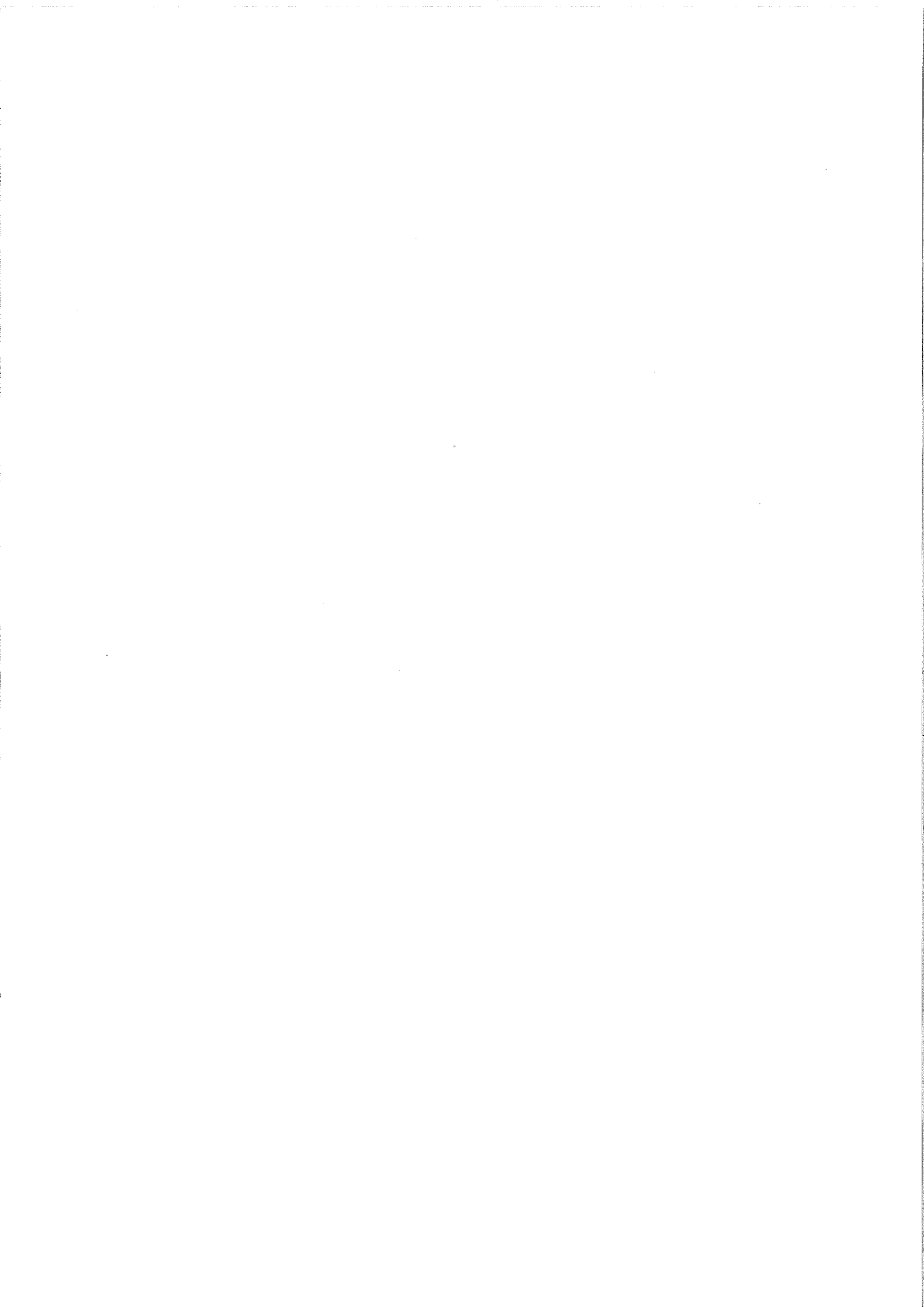


Fig 4 Oil level - hydraulic oil tank

A = Full      B = Low

- 1 Drive the machine onto level surface and check the oil level in the sight glass.
- 2 If the oil level is close to the LOW mark, replenish with grade C oil as recommended on page 1 under "Lubricants", to the FULL mark.



### Fuel tank — replenishing



Replenish the fuel tank daily, up to the lower edge of the filler tube. Use diesel fuel.

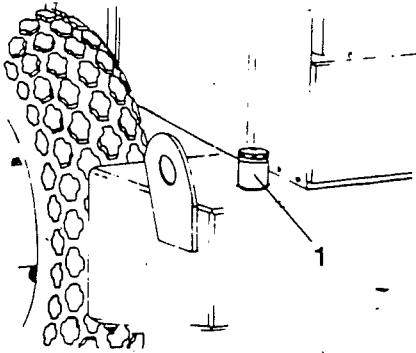


Fig 5 Fuel tank

1 Filler tube

### Sprinkler — checking

Check that the sprinkler nozzles are not clogged. Clean them if necessary.



## EVERY WEEK

(every 50 hours of operation)

### Air cleaner — checking the dust indicator

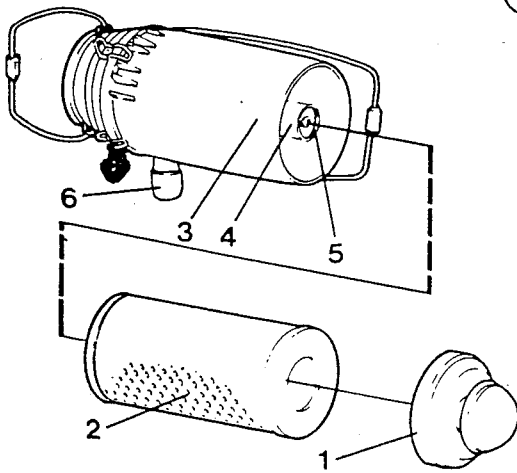


Fig 6 Air cleaner

- 1 Cover
- 2 Main filter
- 3 Filter housing
- 4 Back-up filter
- 5 Strip for marking
- 6 Filter indicator



NOTE The air cleaner is fitted with a filter indicator (6). The main filter should be cleaned when the indicator shows red.

- 1 Release the wire catches and remove the cover (1).
- 2 Remove the main filter (2) and blow it clean with compressed air. Do not blow at right-angles to the filter.
- 3 The back-up filter (4) is fitted with a strip (5) that has five squares marked 1 - 5. Make a cross in a square each time the main filter is cleaned. When the five squares have been filled, replace the back-up filter.
- 4 Replace the main filter as necessary, but never use it for more than 1½ - 2 years.
- 5 Make sure that any dust has not entered the filter during operation.

Dust adhering to the inside of the engine induction pipe indicates dust penetration.

NOTE If dust has penetrated the filter, this will be a sign that the connection, hoses or the element leak and must therefore be changed.

### Main filter — cleaning with compressed air

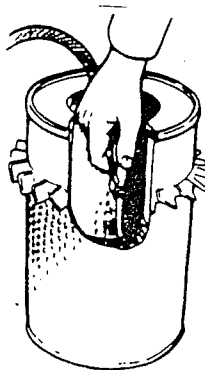
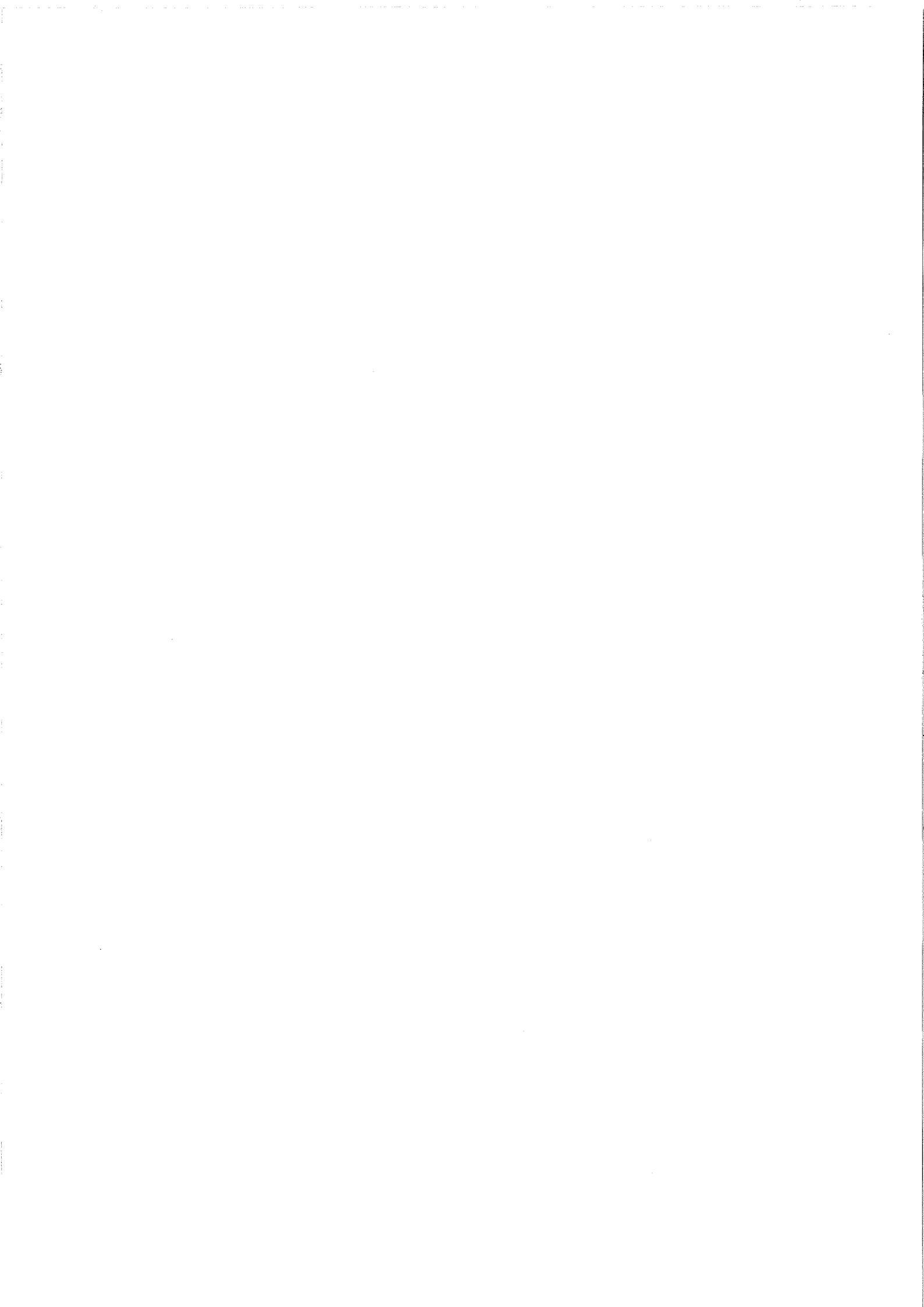


Fig 7 Blowing clean the filter element.

Use compressed air at a maximum pressure of 0.5 MPa (kgf/cm<sup>2</sup>)(70 psi).

Play the compressed air up and down the inside of the filter element. Keep the nozzle at least 2 - 3 cm (1 in) from the element, to avoid damaging the paper.

Discard the main filter after it has been cleaned 5 times.





## Main filter — cleaning by washing

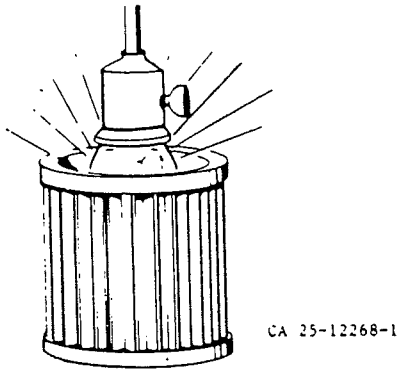


Fig 8 Main filter - checking the tightness

If the main filter is sooty or oily, it should be washed in a solution of water and non-foaming detergent.

Immerse the filter in the detergent solution and leave it for at least 15 minutes. Raise and lower the filter in the solution from time to time to improve the cleaning effect.

**NOTE** Discard the main filter after it has been cleaned 5 times. Do not fit a filter that has been washed in detergent until it is completely dry.

- 1 Check that the filter is intact before refitting it. If it has any holes or if the seals are defective, fit a new filter.
- 2 Wipe the cover clean and slide the main filter into the filter housing. Check the cover seals and replace any that are damaged.
- 3 Refit the wire catches. Check that they seat in their locking positions.

## Hydraulic tank filler cap — checking the breather holes

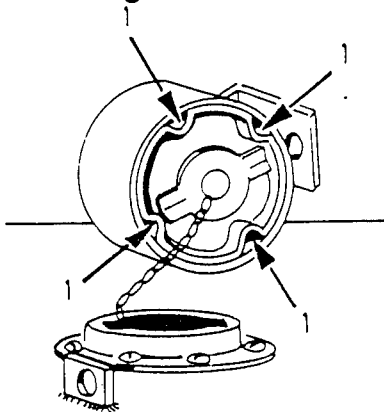


Fig 9 Cover - hydraulic oil tank

1 Breather holes

Remove the filler cap and check that the breather holes are not clogged.

If necessary, wash the filler cap in hydraulic or diesel oil and blow it dry with compressed air.

## Battery — checking the electrolyte level

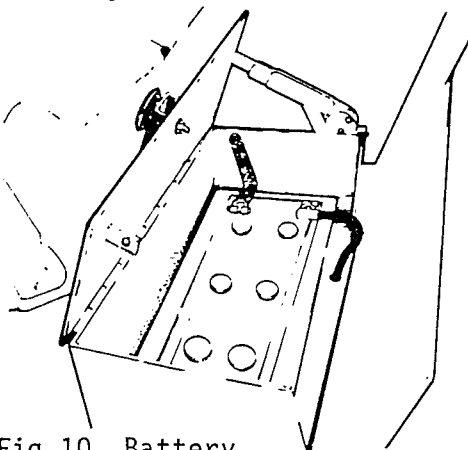


Fig 10 Battery

- 1 Swing up the seat.
- 2 Wipe clean the top of the battery.



**⚠ NEVER USE A NAKED FLAME WHEN CHECKING THE ELECTROLYTE LEVEL, SINCE EXPLOSIVE GAS IS FORMED IN THE BATTERY WHEN IT IS CHARGING.**

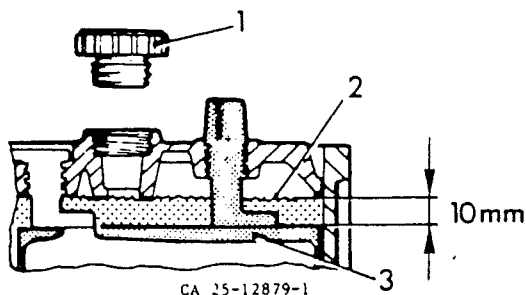


Fig 11 Battery electrolyte level

- 1 Cell plug
- 2 Electrolyte level
- 3 Plate

- 3 Remove the cell plugs and check that the level of the electrolyte is about 10 mm (0.4 in) above the plates.

Perform the same check on all cells. If the level in any is low, top it 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, otherwise the water may freeze.

- 4 Check that the breather holes in the cell plugs are not clogged, then replace them.
- 5 The lead terminals should be clean and firmly tightened. If they are corroded, clean them and coat them with petroleum jelly.

### Drum — checking the oil level

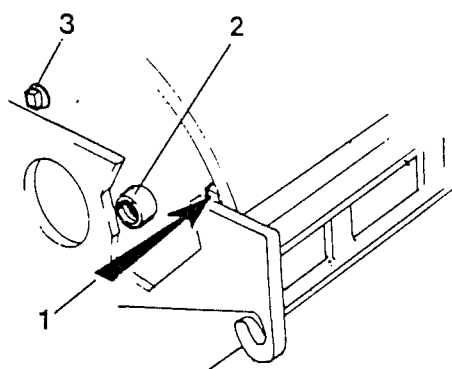


Fig 12 Checking the oil level in the drum

- 1 Level pin
- 2 Sight glass
- 3 Filler plug

- 1 Drive the roller onto a level surface, so that the red level pin (1) is level with the top of the frame member.
- 2 The oil level should reach about half way up the sight glass (2).
- 3 Top up, as necessary, using grade D oil as recommended on page 1 under "Lubricants". Pour the oil in through the filler plug (3), but do not fill to more than half way up the sight glass.

### Shock absorbers and mounting screws — checking

Ensure that the shock absorbers are undamaged and that the mounting screws are tight. Replace shock absorbers when 15 - 20 mm (0.5 - 0.8 in) deep cracks are detected in them.

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



### Steering cylinders and articulated joint — greasing

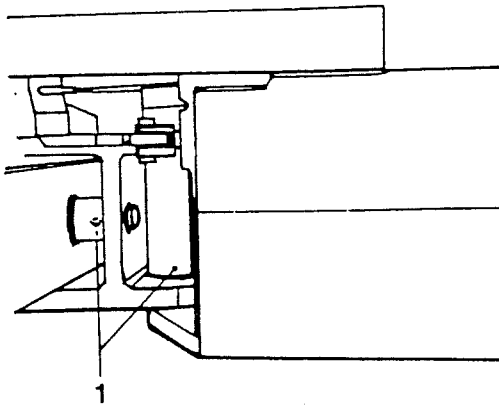


Fig 13 Articulated joint

1 Grease nipples



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

- 1 Turn the drum section to the right so that all the grease nipples on the left-hand side are accessible.
- 2 Clean any dirt and grease off the two nipples.
- 3 Grease each nipple with five 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.

NOTE If the grease does not enter the bearings, it may be necessary to relieve the steering pivot of load, using a jack, and repeat the lubrication procedure.

### Steering cylinder and articulated joint — greasing

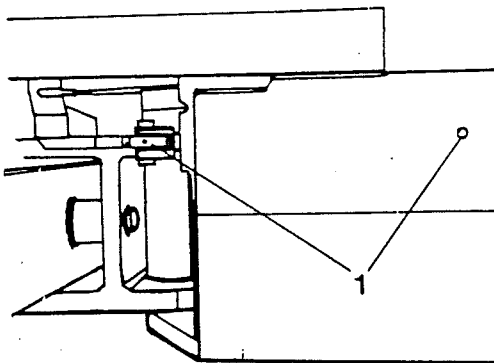
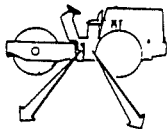


Fig 14 Steering cylinder grease nipples

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

- 1 Wipe any dirt and grease off the two nipples.
- 2 Grease each nipple with three strokes of the grease gun. Check that grease enters the bearings.

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

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



## Tyre pressures

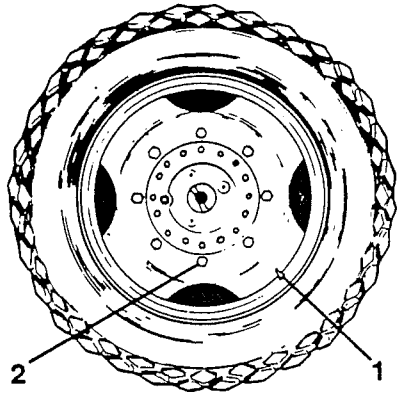


Fig 15 Wheel

- 1 Air valve
- 2 Wheel nut

Check the tyre pressures, using the tyre pressure gauge included in the roller tool kit.

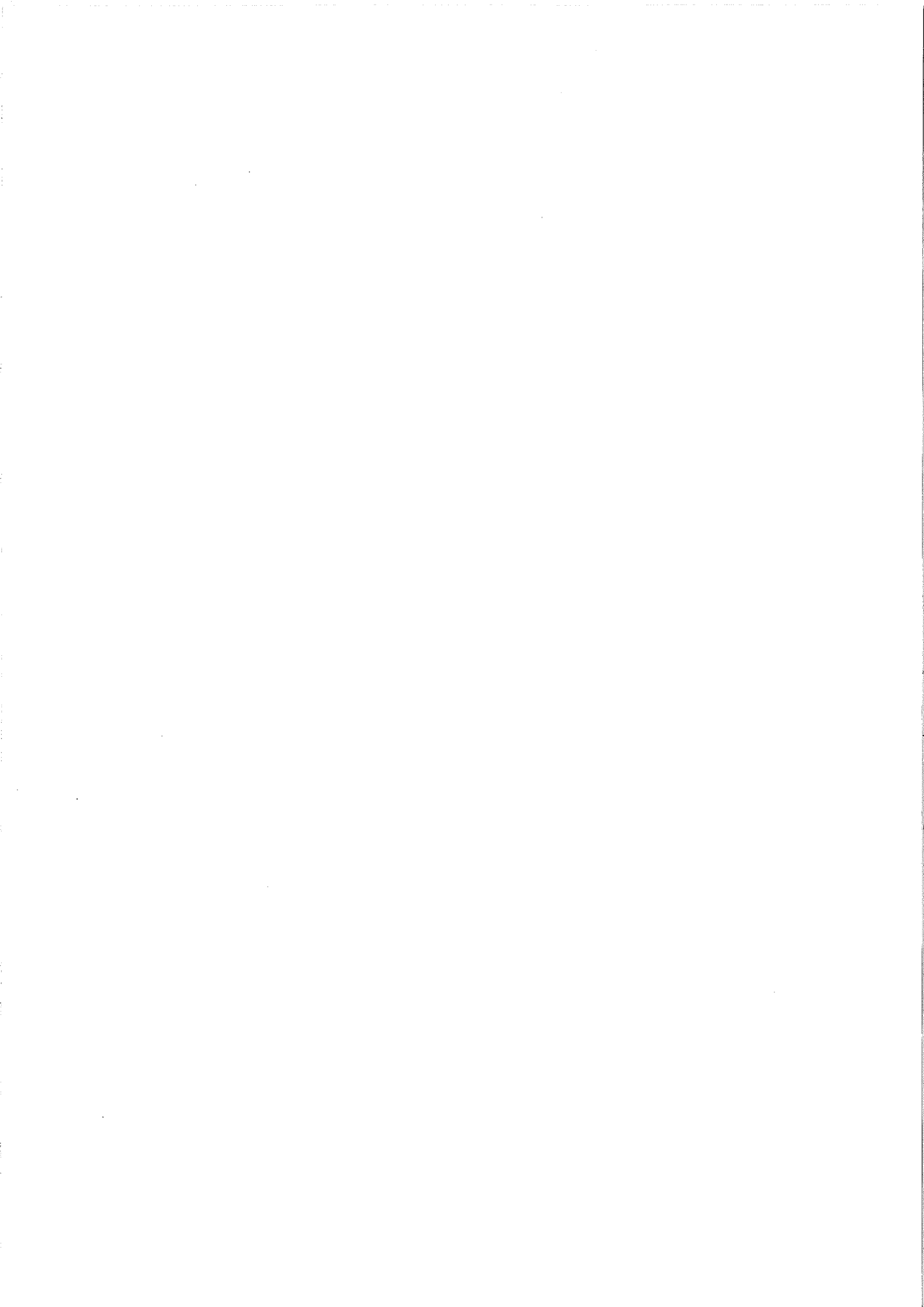
The minimum tyre pressure should not exceed 0.11 MPa (1.1 kgf/cm<sup>2</sup>) (15.6 psi).

The maximum tyre pressure should not exceed 0.15 MPa (1.5 kgf/cm<sup>2</sup>) (21.4 psi).

## Wheel nuts — tightening

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

Check all the wheel nuts on both sides of the roller.





## EVERY 14 DAYS (every 100 hours of operation)

Fuel injection pump - checking the level (This only applies to engines without central lubrication)

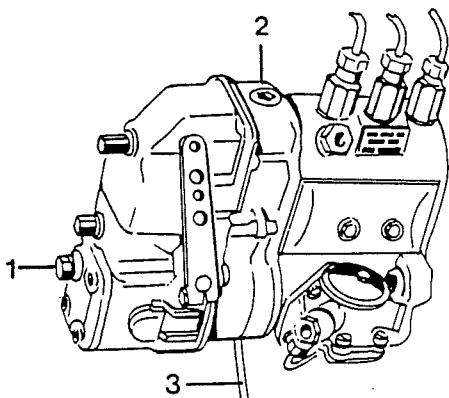


Fig 16 Fuel injection pump

- 1 Level plug
- 2 Oil filler plug
- 3 Return oil line

- 1 Unscrew the plug (1) about 3 turns, so that any excess oil and fuel mixture is drained off.
- 2 Fill up with new, grade B oil, as recommended on page 1 under "Lubricants". Pour in the oil through the oil filler plug (2) until the level is up to the level plug (1). Oil capacity: About 0.5 litres (0.13 US gallons).
- 3 Tighten the plugs.

Note about new rollers:

- o If there is no return oil line (3), the fuel injection pump is connected to the engine's central lubrication system, so it will not be necessary to check the oil level.

### Engine cooling fins — cleaning.

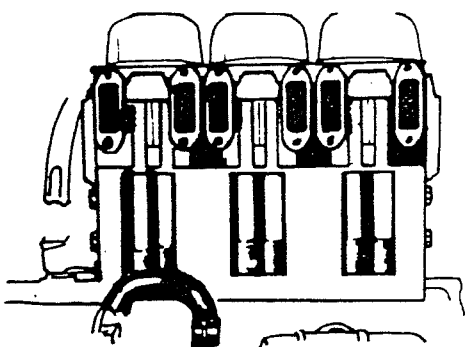


Fig 17 Engine cooling fins

- 1 Remove the rear engine cover on the left-hand side of the roller and open the bonnet.
- 2 Release the locks and remove the air ducting from the engine.
- 3 Clean the cooling fins carefully, preferably using compressed air.

### Hydraulic oil cooler — cleaning the exterior

Check that air can flow freely through the oil cooler. If the cooler is dirty, clean it by flushing with water or blowing with compressed air. Remove the covering plate from in front of the cooler.

After cleaning, check that any seals and sound absorbers are not damaged. Refit the covering plates.



## V-belt — checking

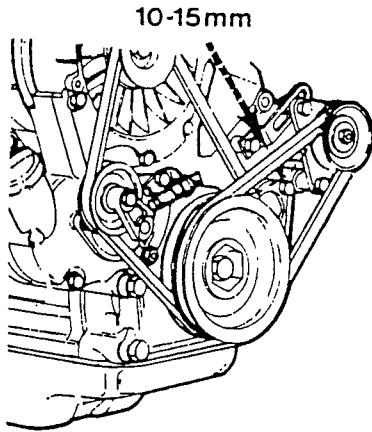


Fig 18 Checking the V-belt tension

- 1 Check the V-belt tension by pressing the belt mid-way 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.
- 2 At the same time, check that the fan V-belt monitor is in working order. The horn should sound with the V-belt monitor contact (2 in Fig 21) is depressed.

**NOTE** If the V-belt monitor is not working, it should be repaired immediately.

## V-belt — adjusting

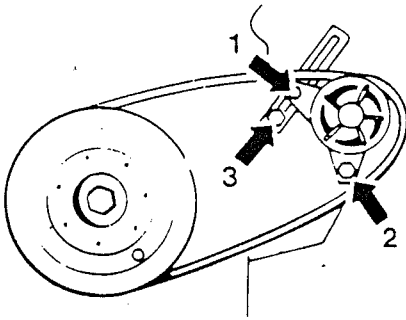


Fig 19 Tensioning the alternator V-belt

- 1 Unscrew the alternator retaining screws 1 and 2 and the nut 3 a few turns.
- 2 Then press the alternator outwards until the belt is correctly tensioned (see above).
- 3 Then tighten screws 1 and 2 and nut 3.

**NOTE** Tension a new alternator V-belt again 40 hours of operation after it was first tensioned.

## V-belt monitor — checking

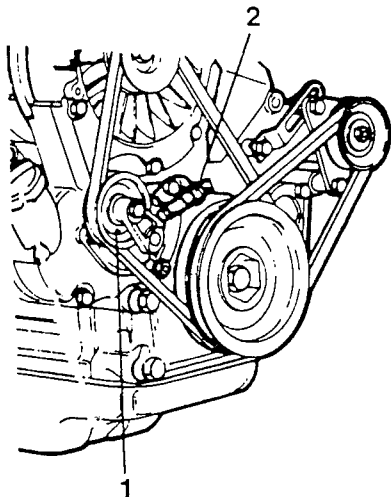


Fig 20 Checking the V-belt and V-belt monitor

- 1 Belt tensioner
- 2 V-belt monitor

The V-belt tension is maintained by means of a spring-loaded belt tensioner (1). If the V-belt should break, the spring-loaded belt tensioner will move outwards and actuate the pressure switch on the V-belt monitor (2), thus causing the horn to sound.

The V-belt monitor is operable, even when the starter switch is in the "OFF" position.

Depress the switch (2), which should cause the horn to sound. If the V-belt monitor is defective, it must be repaired immediately.



## V-belt — replacing

- 1 Stop the machine immediately (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.

## Torque hub — checking the oil level

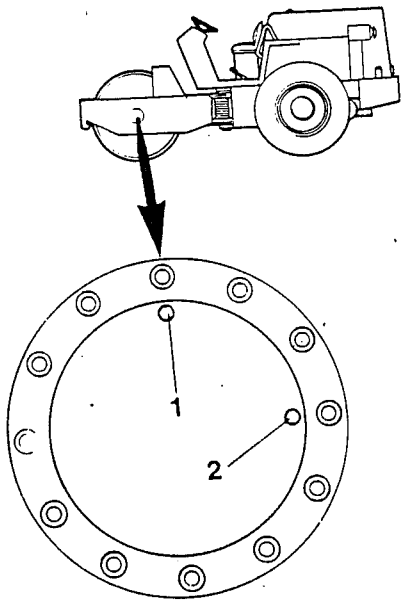


Fig 21 Filling up with oil

- 1 Oil filler plug
- 2 Level/drain plug



Only on D and PD machines.

- 1 Drive the machine onto a level surface and ensure that the filler plug (1) is in its highest position.
- 2 Wipe clean the area round the plugs.
- 3 Remove the plugs and check that the oil level reaches 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)

### Hydraulic oil filter — replacing

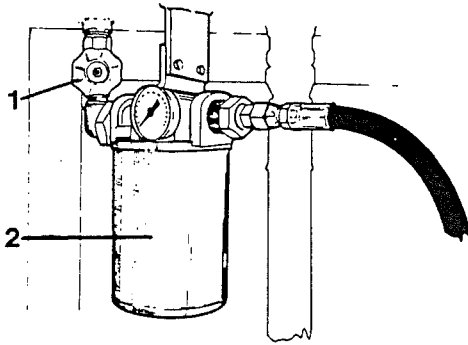


Fig 22 Hydraulic oil filter

- 1 Oil supply cock
- 2 Filter

- 1 Turn of the oil supply cock (1).
- 2 Remove the oil filter (2). Discard it, it is of the disposable type and cannot be cleaned.

NOTE Ensure that the old seal is not left in position. Leakage with otherwise occur between the new and the old seal.

- 3 Clean the sealing surfaces of the filter head thoroughly.
- 4 Apply a thin layer of hydraulic oil to the seal of the new filter.
- 5 Screw the new filter into place by hand.

First screw the filter in until its seal seats against the filter head, then tighten it an additional half-turn.

NOTE Do not tighten the filter too much - this may damage the seal.

- 6 Open the oil supply cock (1).
- 7 Start the engine and check that no hydraulic oil leaks out round the filter.

### Engine — changing the oil

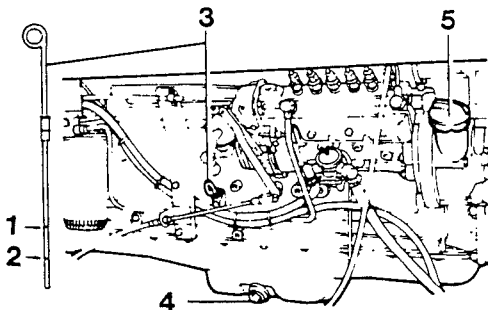


Fig 23 Engine

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

When the engine is hot:

- 1 Remove the oil filler cap (5).
- 2 Remove the drain plug (4) and allow the old oil to drain out into a suitable receptacle. At the same time, replace the oil filter.
- 3 Clean the drain plug (4) and refit it.





## Engine — replacing the oil filter

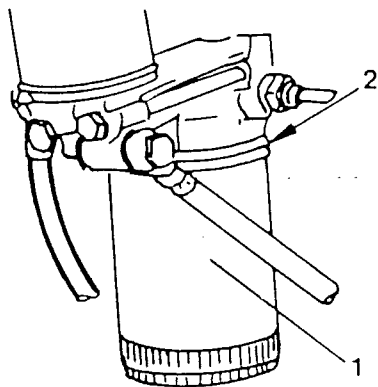


Fig 24 Lubricating oil filter

- 1 Filter
- 2 Rubber seal

- 1 Use a filter spanner to loosen the filter (1).
- 2 Unscrew the filter by hand.

Discard the filter, it is of the disposable type and cannot be cleaned.

- 3 Clean the sealing surface of the filter head.
- 4 Apply oil to the rubber seal (2) of the new filter.
- 5 Screw the filter in by hand until the rubber seal seats against the filter head. Then tighten the filter an additional half-turn.

**NOTE** Do not tighten the filter too much - this may damage the seal (2).

## Engine — filling up with oil

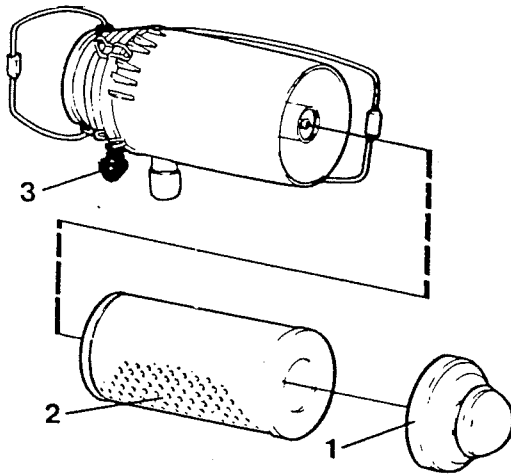
- 1 Fill up with grade B oil on page 1 under "Lubricants".  
Capacity: about 11 litres (2.9 US gallons).
- 2 Check the oil level using the dipstick. The level should be up to the upper level mark (1 in Fig 24). Fill up with more oil as necessary.
- 3 Replace the oil filler cap.
- 4 Start the engine and run it until it is warmed up. Check that there is not oil leakage.

## Water tank — cleaning the strainer

Take out the strainer and wash it in water.



## Air cleaner — cleaning the rubber valve



The dust collector on the filter is fitted with an automatic discharge valve (3). This discharges dust and water continually.

Check that the slit in the rubber valve (3) is not blocked.

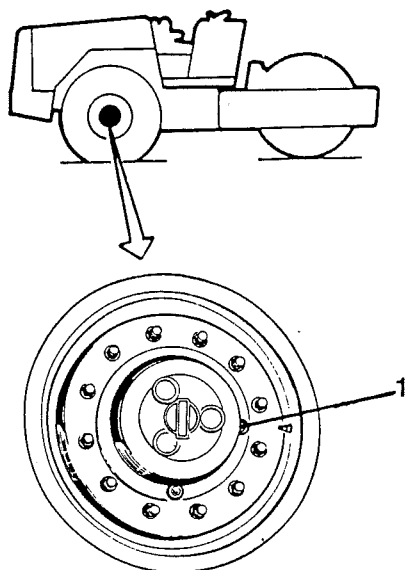
NOTE Under very dusty conditions, the rubber valve should be checked daily.

Fig 25 Air cleaner

- 1 Cover
- 2 Main filter
- 3 Rubber valve



## Rear axle planetary gears — checking the oil level



- 1 Drive the machine onto a level surface, until one of the planetary gear oil plugs (1) is in the correct position (see fig 26).
- 2 Remove the oil plug and check that the oil reaches up to the lower edge of the plug hole.

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

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

- 3 Check the oil level in the other rear axle planetary gear in the same manner.

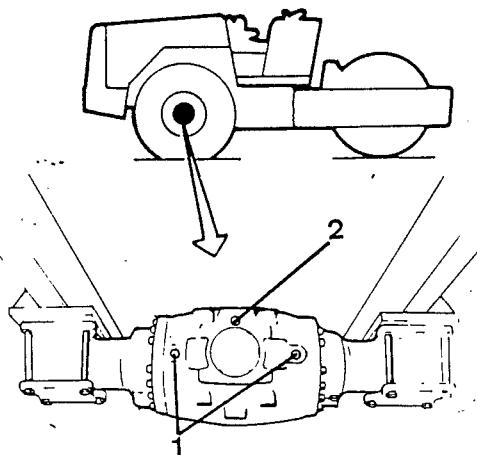
Fig 26 Checking the planetary gear oil level

1 Oil level check position

## Rear axle differential — checking the oil level



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



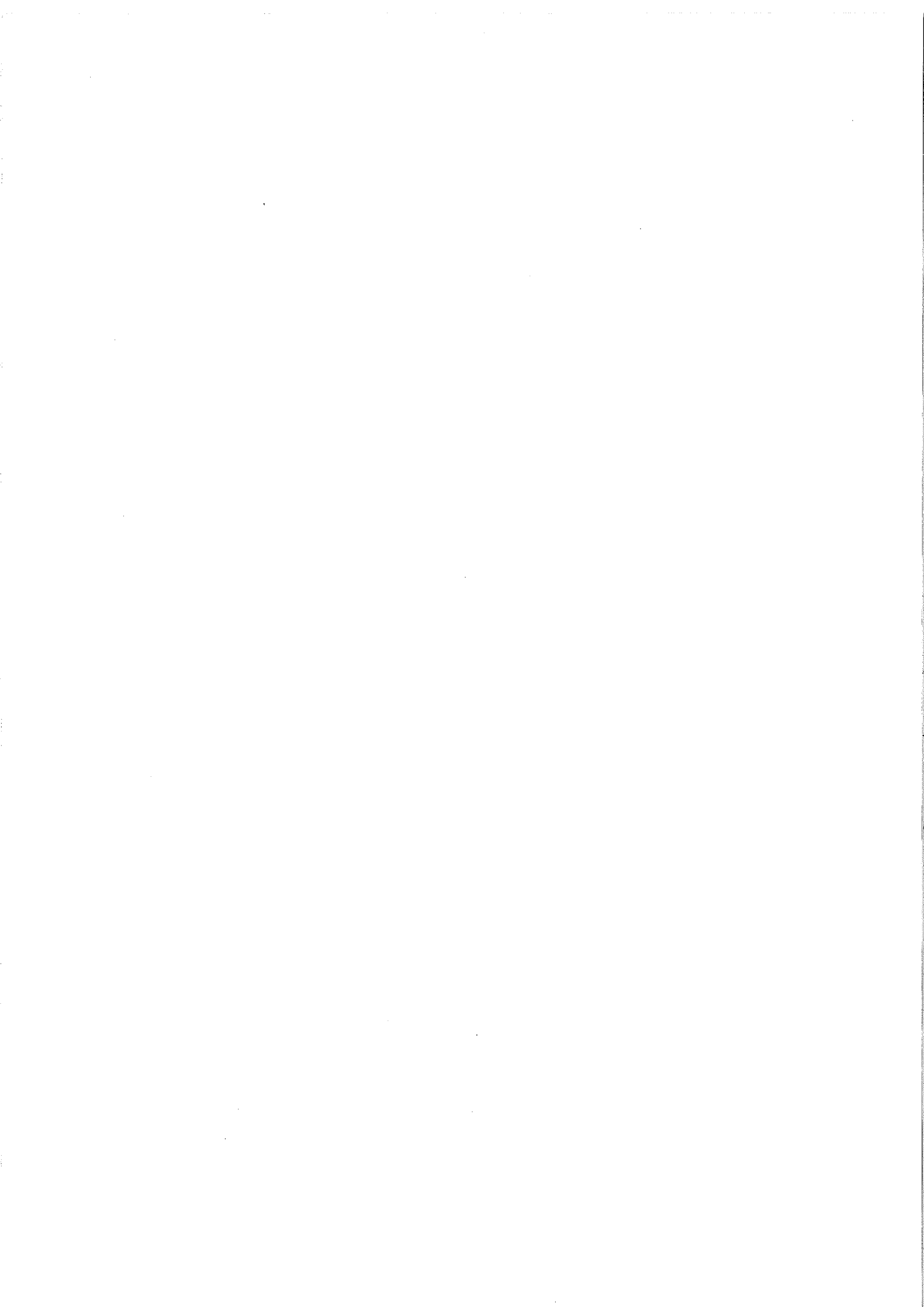
- 1 Ensure that the machine is standing on a level surface.
- 2 Remove the level plugs (1) and check that the oil reaches up to the lower edge of the plug hole.

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

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

Fig 27 Checking the differential housing oil level

1 Level plugs  
2 Påfyllnadsplugg



## EVERY SIX MONTHS

(every 1000 hours of operation)

### Fuel filter — replacing

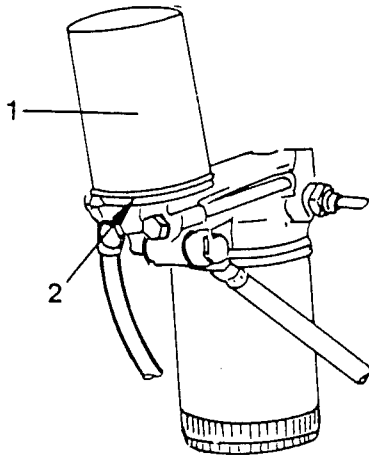


Fig 28 Fuel filter

- 1 Fuel filter
- 2 Sealing surface

- 1 Unscrew the fuel filter (1) with care, since fuel will flow out.
- 2 Clean the sealing surface (2).
- 3 Apply a little oil to the seal on the new filter.
- 4 Screw the new filter into place by hand until the rubber seal has seated correctly and then turn the filter an additional half-turn.

### Fuel system — bleeding

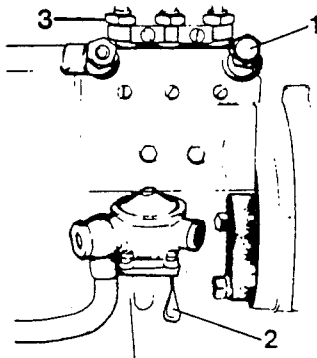


Fig 29 Fuel system

- 1 Screw
- 2 Pump lever
- 3 Pressure line

- 1 Unscrew the screw (1).
  - 2 Pump the pump lever (2) on the feed pump by hand 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 screw when the hand pump is pumped, turn the engine over, so that the injection pump camshaft lifts the feed pump diaphragm.
- 4 If the pressure lines have been disconnected, they must also be bled.
  - 5 Unscrew the pressure line connection (3) 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 — cleaning the strainer

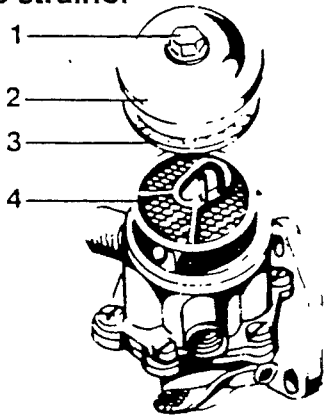


Fig 30 Feed pump

- |                   |            |
|-------------------|------------|
| 1 Retaining screw | 3 Gasket   |
| 2 Cover           | 4 Strainer |

- 1 Unscrew the screw (1).
- 2 Remove the cover (2).
- 3 Remove the strainer (4) and clean it with diesel fuel.
- 4 Lubricate the gasket (3) with clean diesel fuel.
- 5 Assemble the strainer in the reverse order.
- 6 Bleed the fuel system (see the section "Fuel system - bleeding" on page 21).

**NOTE** Check that the engine runs and that there is no leakage.

### Torque hub — changing the oil

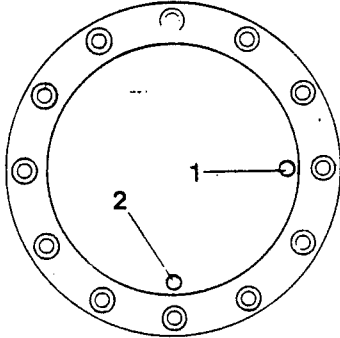
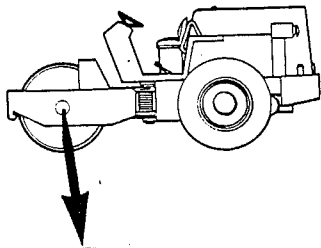


Fig 31 Draining the oil

- |                    |
|--------------------|
| 1 Filler plug      |
| 2 Drain/level plug |

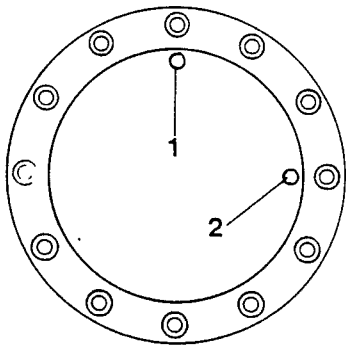


Fig 32 Filling up with oil

- |                    |
|--------------------|
| 1 Filler plug      |
| 2 Level/drain plug |

Only on D and PD machines  
Before draining the oil, run the system so that it is hot.

- 1 Drive the roller onto a level surface, so that the drain/level plug (2) is at its lowest position.
- 2 Wipe clean the area around the plugs.
- 3 Place a vessel to hold about 3.5 litres (1 US gallon) under the drain plug (2) and drain the oil. Remove the filler plug (1) as well.

4 Move the roller, so that the filler plug (1) is at its uppermost position.

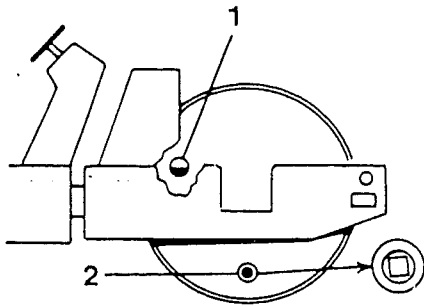
5 Fill up with oil through the plug hole (1) until the oil level reaches the level plug hole (2). Use grade D oil as recommended on page 1 under "Lubricants".

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

6 Refit the plugs.



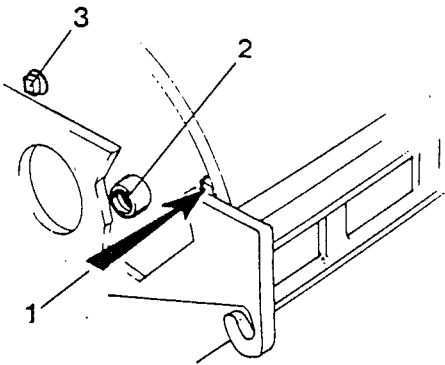
## Drum — changing the oil



- 1 Drive the roller onto a slightly sloping surface, so that the drain plug (2) is at its lowest position.
- 2 Remove the plug and drain the oil.  
Collect the oil in a receptacle.

Fig 33 Draining the oil

- 1 Sight glass
- 2 Drain plug



- 3 Screw in the drain plug securely and drive the roller onto a level surface, so that the red pin (1) is on the same level as the top of the frame member.
- 4 The oil should reach about half way up the sight glass (2).
- 5 Fill up with grade D oil as recommended on page 1 under "Lubricants", but not more than half way up the sight glass. Pour the oil in through the filler/drain plug hole (3).

Fig 34 Filling up with oil

- 1 Level pin
- 2 Sight glass
- 3 Filler/drain plug

## Fuel tank — draining

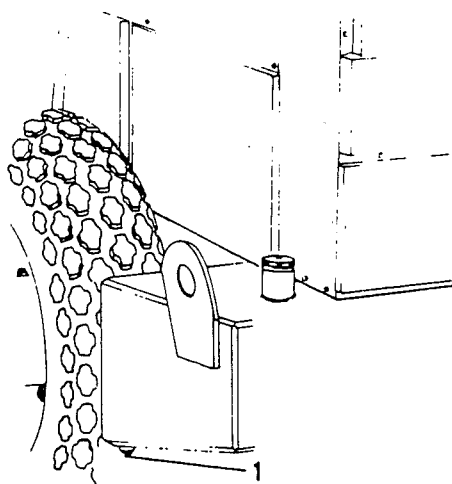


Fig 35 Fuel tank

- 1 Drain plug

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

The water should be drained 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 one of the drain plugs.

Drain as follows:

- 1 Clean the area around the lower drain plug.
- 2 Remove the plug and drain the water and sediment until only clean diesel fuel flows out of the drain plug hole. Then screw the plug back into place.

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



## EVERY YEAR

(every 2000 hours of operation)

### Hydraulic tank — changing the oil

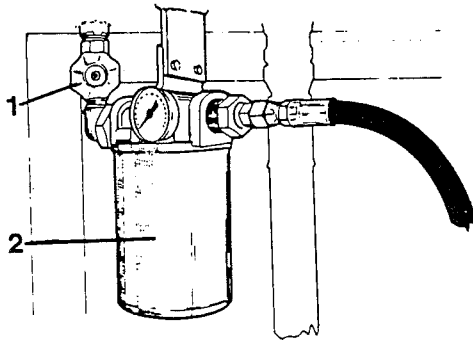


Fig 36 Hydraulic oil filter

- 1 Oil supply cock
- 2 Filter

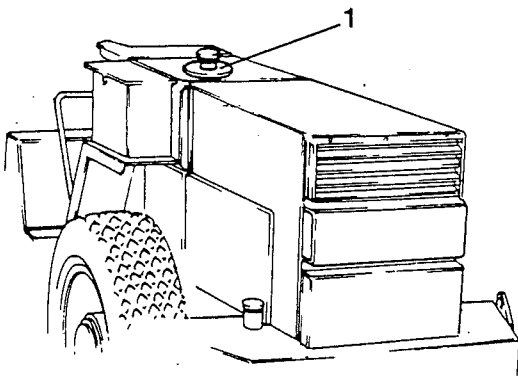


Fig 37 Hydraulic tank

- 1 Cover

Change the oil in the hydraulic system when it is hot, such as 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 will flow out with it when the oil is drained.

- 1 Clean the outside of the filter mounting thoroughly.
- 2 Procure a receptacle to hold approximately 150 litres (40 US gallons) in which to collect the oil. An empty oil drum or the like is a suitable receptacle. Place the drum beside the roller, so that the oil will be able to flow through a funnel and into a hose to the oil drum.
- 3 Close the oil supply cock (1).
- 4 Remove the filter.
- 5 Open the oil supply cock (1) and let the oil flow out through the funnel and hose.

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

- 6 Remove the cover (1 in Fig 42) on the top of the hydraulic tank. Take care to prevent impurities from entering the tank.
- 7 Clean the tank filler cap and filler strainer. Check that the strainer is intact.
- 8 Clean the tank. The best way of doing this is to draw 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.

**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.

- 9 Refit the cover plate. Use a new gasket and apply Loctite sealing compound or its equivalent to make a good seal.

**NOTE** Ensure that no sealing compound enters the tank.



## Hydraulic tank — replenishing with oil

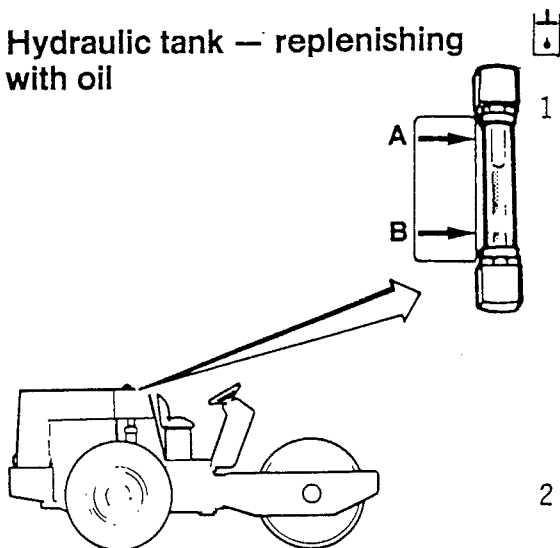


Fig 38 Oil level -  
hydraulic oil tank

A = Full B = Low

- 1 Fit a new hydraulic oil filter in accordance with the instructions on page 16. Open the oil supply cock.

Fill up with oil to the FULL mark on the sight glass. The capacity of the tank is about 114 litres (30 US gallons). Use grade C oil as recommended on page 1 under "Lubricants".

When filling the tank, the oil should be pumped through a filter unit.

- 2 Start the engine and operate the various hydraulic units.
- 3 Check the oil level and, if necessary, top up with more oil.





## Planetary gears of rear axle — oil change

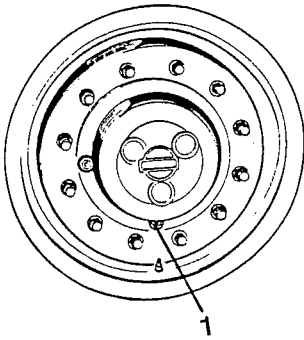


Fig 39

1 Drain position

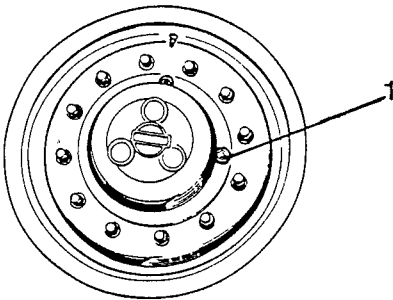


Fig 40

1 Filling position

## Rear axle differential — oil change

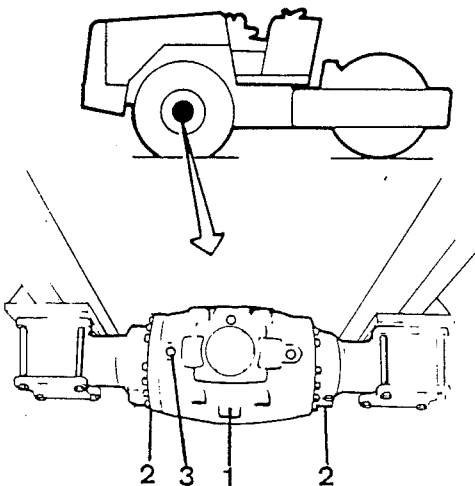


Fig 41

1 Drain plug  
2 Drain plugs  
3 Level plugs  
4 Filler plug



- 1 Drive the roller onto a level surface so that the drain plug is at its lowest point.
- 2 Remove the level and drain plugs.
- 3 Place a receptacle to hold about 3 litres (0.8 US gallon) under the drain plugs.  
Drain the oil.
- 4 Drive the roller so that the level plug is positioned according to the figure.
- 5 Fill up with oil through the plug hole until oil reaches up to the lower edge of the hole. Each planetary gear holds about 2.5 litres (0.7 US gallon). Use oil type D as recommended on page 1 under "Lubricants".
- 6 Refit the plugs.
- 7 Change the oil in the other rear axle planetary gear in the same manner.



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

- 1 Drive the roller onto a level surface and stop the engine.
- 2 Clean the area around the plugs (1), (2), (3) and (4).
- 3 Place a receptacle to hold about 12 litres (3.2 US gallon) under the drain plug (1).
- 4 Remove the plugs and collect the oil in the receptacle.
- 5 Clean the drain plugs, refit them when all oil has drained and tighten them.
- 6 Fill up with oil through plug (4) up to the lower edge of the hole (3). The differential holds about 10.5 litres (2.8 US gallon). Use grade D oil as recommended on page 1 under "Lubricants".
- 7 Refit the filler plug (4) and tighten it.



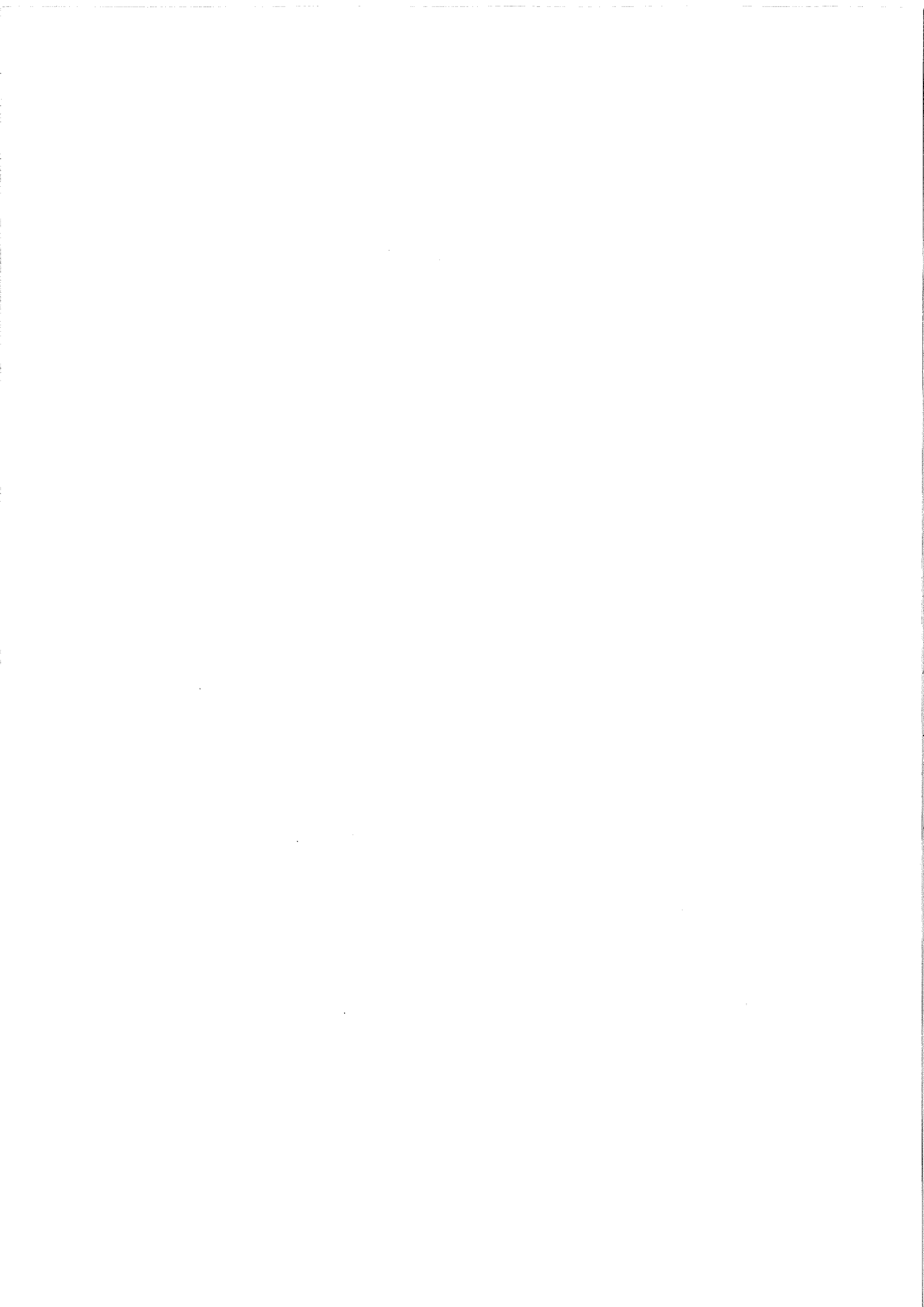
## Water tank — cleaning

Only on CA 15A machines

Remove the plug from the bottom of the water tank and allow all the water to run out.

Clean the inside of the tank with water to which a suitable cleanser has been added.

Refit the plug.



## SPECIAL INSTRUCTIONS

When it is delivered from the factory, the roller is filled with the standard oil specified in the table below. The listed brands of oils are only examples. In all cases, equivalent oils 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 must be used.

Before using the roller at extremely low ambient temperatures, read the EXPLANATORY NOTES below.

### Explanatory 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.

A little extra attention should be paid when using rollers fitted with additional equipment such as noise-damping equipment etc. at the upper end of the temperature range.

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. tank	-10 - +40 (14) - (104)	0 - +50 (32) - (122)		
Drum			-15 - +40 (5) - (104)	+5 - +50 (41) - (122)



## Engine lubricating oils

Engine oils in accordance with "API Service CD/SE, SAE 10W/30", such as Shell Rimula X Oil 15W/40, should be used under normal conditions.

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

## INSTRUCTIONS FOR LONGTERM PARKING

This applies to rollers fitted with rubber-coated drums.

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

To prevent such damage, lift the drum frame up 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.