

The CA25/30 family of vibratory rollers consists of the CA251/301 Std, D and PD.

These rollers are designed for efficient, high-capacity compaction of roads, airfields, dam constructions and similar applications and they effectively pack crushed stone, gravel, sand and clay.

CA251/301 is the basic version described in these instructions. Separate information is available on request concerning accessories or additional equipment.

# Operation

## CA251/301

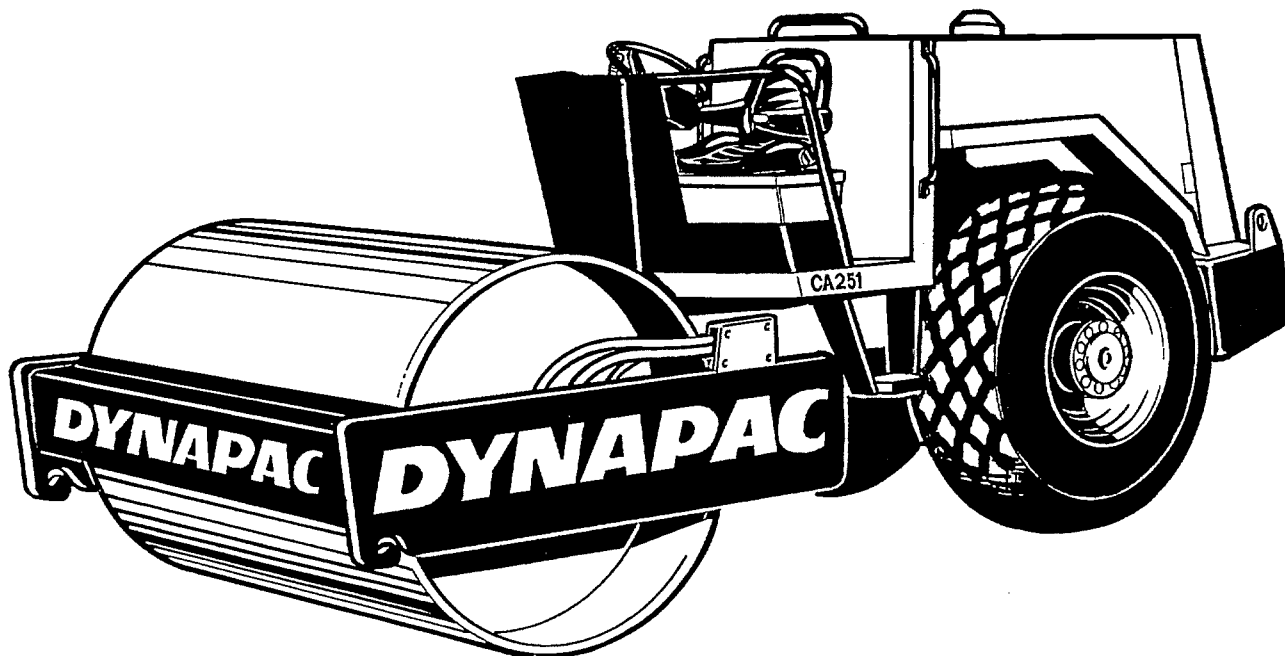
### VIBRATORY ROLLER

O-10235-2 En

Diesel Engine:  
Cummins 6BT 5.9  
Deutz F6L 912

These instructions apply from  
S/N\*581\*10251\* and  
S/N\*582\*10301\*

P/N 11 19 53



**DYNAPAC**  
Dynapac Heavy Equipment AB

Printed in Sweden

Box 504, 317 23 KARLSKRONA, SWEDEN  
Tel. 0455-229 30  
Telex 43041 dynkar  
Telefax 0455-295 39

## CONTENTS

	Page
Safety Instructions	3
Instruments and Controls	4
Instruments and Controls, Functional Description	5
Before Starting	9
Starting	10
Driving	11
Driving/Vibrating	13
Braking	13
Emergency Braking	13
Stopping	14
Electrical System	14
Parking	15
Hoisting	16
Driving after Hoisting	16
Towing	17
After Towing	18
Transport	19

WARNING



WARNING - Personal safety may be involved.

CAUTION



CAUTION - Damage to component or machine.

This manual contains instructions concerning operation of the machine. For information regarding care and maintenance, see the "MAINTENANCE" manual.

CAUTION



The roller is equipped with an alternator.  
See "MAINTENANCE" and decal on the roller.

## SAFETY INSTRUCTIONS

WARNING



1. The operator must read and understand the contents of this manual before starting the roller.
2. Current instructions for care and maintenance of the roller must be adhered to, see "MAINTENANCE" manual.
3. Only trained and/or experienced operators are allowed to drive the roller.
4. Never use the roller when it is in need of adjustment and/or repairs.
5. Follow all safety instructions. Use the available safety equipment.
6. Remember the risk of overturning. Avoid driving on loose edges or close to large holes in the ground.
7. Before driving, check all operating controls, brakes and steering.
8. To enable the engine to be started, set the forward/reverse control to neutral. Adjust the seat in order to easily reach all controls.
9. Drive with particular care on uneven ground.
10. Before driving, or changing direction, ensure that no-one is in the way of the roller.
11. Do not allow passengers on the roller.
12. Board and leave the roller while it is standing still only. Use the steps, handrail and handles provided.
13. Do not free-wheel downhill.
14. Before getting off the machine, switch off the vibrator, set the forward/reverse selector in neutral, press the EMERGENCY STOP and stop the engine.
15. Keep the roller clean. Avoid dirt and grease on the operator platform.
16. Keep all instruction signs and decals clean and fully legible.
17. Stop the engine, chock the drums/wheels and apply the articulation lock prior to repairs and servicing.
18. Safety measures prior to refueling: Stop the engine. Do not allow naked lights. To avoid electric sparks in the filler hole, touch the filler nozzle against a non-insulated part of the chassis.
19. Do not make any changes/modifications on the roller which may affect safety. Any changes require prior written permission from Dynapac.

# INSTRUMENTS AND CONTROLS

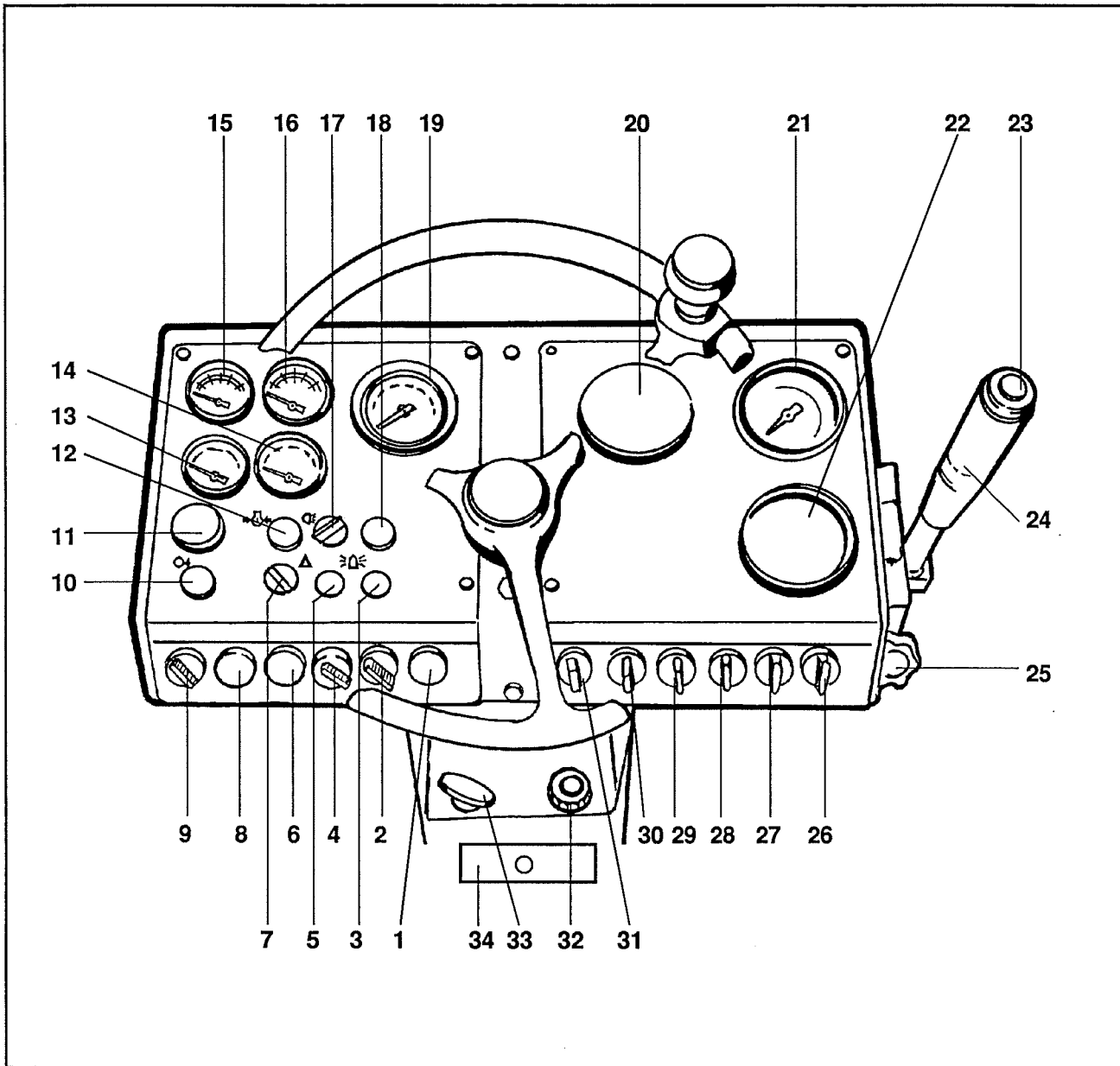

















Fig. 1 Instruments and controls

- |  |  |                                      |
|--|--|--------------------------------------|
| 1 Direction indicator*                 | 13 Voltmeter                             | 25 Speed limiter                     |
| 2 Working lights*                      | 14 Fuel gauge                            | 26 Speed selector                    |
| 3 Hazard beacon*                       | 15 Temperature gauge,<br>hydraulic fluid | 27 Vibrator switch Man/Aut*          |
| 4 Driving lights*                      | 16 Temperature gauge,<br>engine          | 28 Amplitude selector                |
| 5 Hazard flashers*                     | 17 Control lamp*                         | 29 -                                 |
| 6 Horn                                 | 18 Air cleaner, warning lamp             | 30 Watering Man/Aut*                 |
| 7 -                                    | 19 Tachometer/Hour meter                 | 31 Vibr./Frequency meter,<br>ON/OFF* |
| 8 Starter button                       | 20 Compaction meter*                     | 32 Engine throttle                   |
| 9 Power switch (Cummins -<br>Stop)     | 21 Frequency meter*                      | 33 Engine stop (Deutz)               |
| 10 Brake warning lamp                  | 22 Speedometer*                          | 34 Fuse box                          |
| 11 EMERGENCY STOP                      | 23 Vibration ON/OFF                      |                                      |
| 12 Engine oil pressure<br>warning lamp | 24 Forward/Reverse control               |                                      |

\* Optional equipment

## INSTRUMENTS AND CONTROLS, FUNCTIONAL DESCRIPTION

Item in fig. 1	Designation	Symbol	Function
1	Direction indicator switch (Optional)		
2	Working light switch, rear (Optional)		
3	Hazard beacon switch (Optional)		
4	Headlights switch (Optional)		
5	Hazard flashers switch (Optional)		To warn traffic, switch on when required.
6	Horn		Press to sound the horn.
8	Starter button		Energizes starter motor while pressed.
9	Main switch	 	<p>Electric circuit broken in the O mode. All electric instruments and controls are powered in the I mode.</p> <p>Deutz: The electric circuit must not be broken while the engine is running.</p>
10	Brake warning lamp		Brake is on when lamp lights.
11	EMERGENCY STOP (Red button)	 STOP	<p>OFF (Pulled out) is normal setting when driving.</p> <p>ON (Pushed in) applies the brakes and stops the machine.</p>
12	Oil pressure warning lamp		Indicates insufficient oil pressure. Stop the engine immediately if the lamp lights and locate the cause.
13	Voltmeter		Indicates voltage of the system. Normal range 12 to 15 V.
14	Fuel gauge		Indicates level in fuel tank.
15	Temperature gauge, hydraulic fluid		Indicates temperature of hydraulic fluid. Normally 65°C to 80°C (150°F-175°F). Stop the engine if gauge shows temperature above 85°C (185°F). Locate the cause.

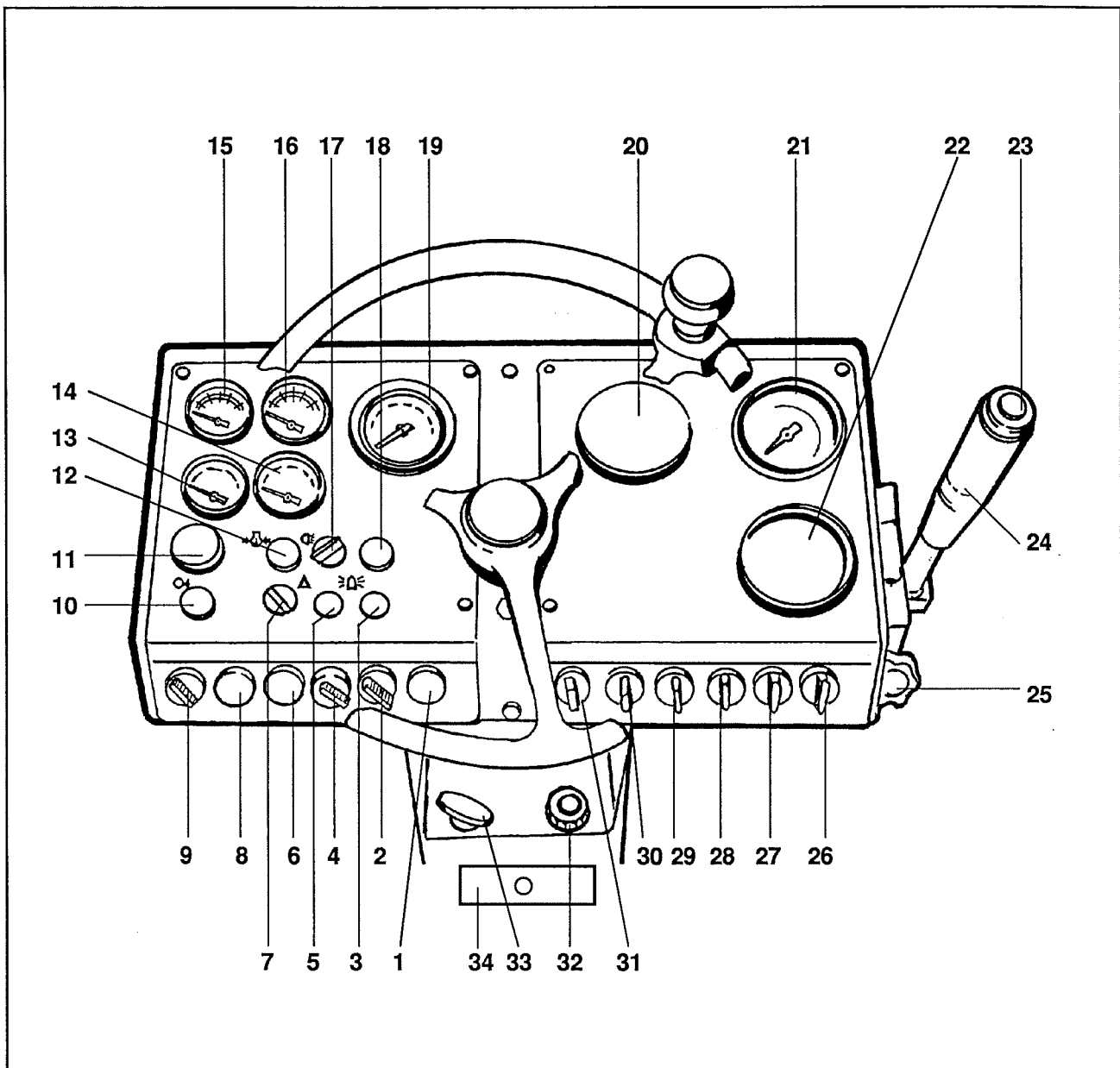












Fig. 1 Instruments and controls

Item in fig. 1	Designation	Symbol	Function
16	Temperature gauge Cummins: Coolant  Deutz: Engine oil	 	<p>Indicates working temperature of engine, normally 82°C to 93°C (180°F to 200°F).</p> <p>See Engine Manual. Indicates temperature of engine.</p>
17	Main/dipped beam, switch and warning lamp (Optional)		<p>Main beam, turn clockwise, knob lights up. Dipped beam, turn anticlockwise, knob light out.</p>

Item in fig. 1	Designation	Symbol	Function
18	Warning lamp - air cleaner		Air filter needs cleaning or changing if lamp lights while engine is running.
19	Tachometer/Hour meter		Indicates speed of engine in r/min. Multiply gauge reading by 100. Operating time shown in hours.
20	Compaction meter (Optional)		
21	Vibration/Frequency meter (Optional)		Indicates actual frequency of the drum. Switch (31) in correct position.
22	Speedometer (Optional)		
23	Vibration ON/OFF		Press to switch on vibrator. Press again to switch off. Applies when (27) is in MAN mode.
24	Forward/reverse control		Move lever in desired direction of travel. Driving speed is proportional to movement of the lever. The machine is braked with the lever in neutral. Observe also that the engine can only be started with the lever in neutral.
25	Speed limiter		Limits movement of the forward/reverse control and thus the speed of the machine. The regulator can be disengaged.
26	Speed selector		Transportation speed Operating speed
27	Vibrator switch (Optional)	MAN O AUT 	In the MAN mode switch vibration ON/OFF with (23). Vibration is switched OFF at setting O. The AUT mode gives automatic switching of vibration ON/OFF when driving forward and reverse, at set speed.
28	Amplitude selector		HIGH mode gives ampl. 1.7 mm (0.07") and centrifugal force 199 kN (44 800 lbs). LOW mode gives ampl. 0.8 mm (0.03") and centrifugal force 92 kN (22 000 lbs).

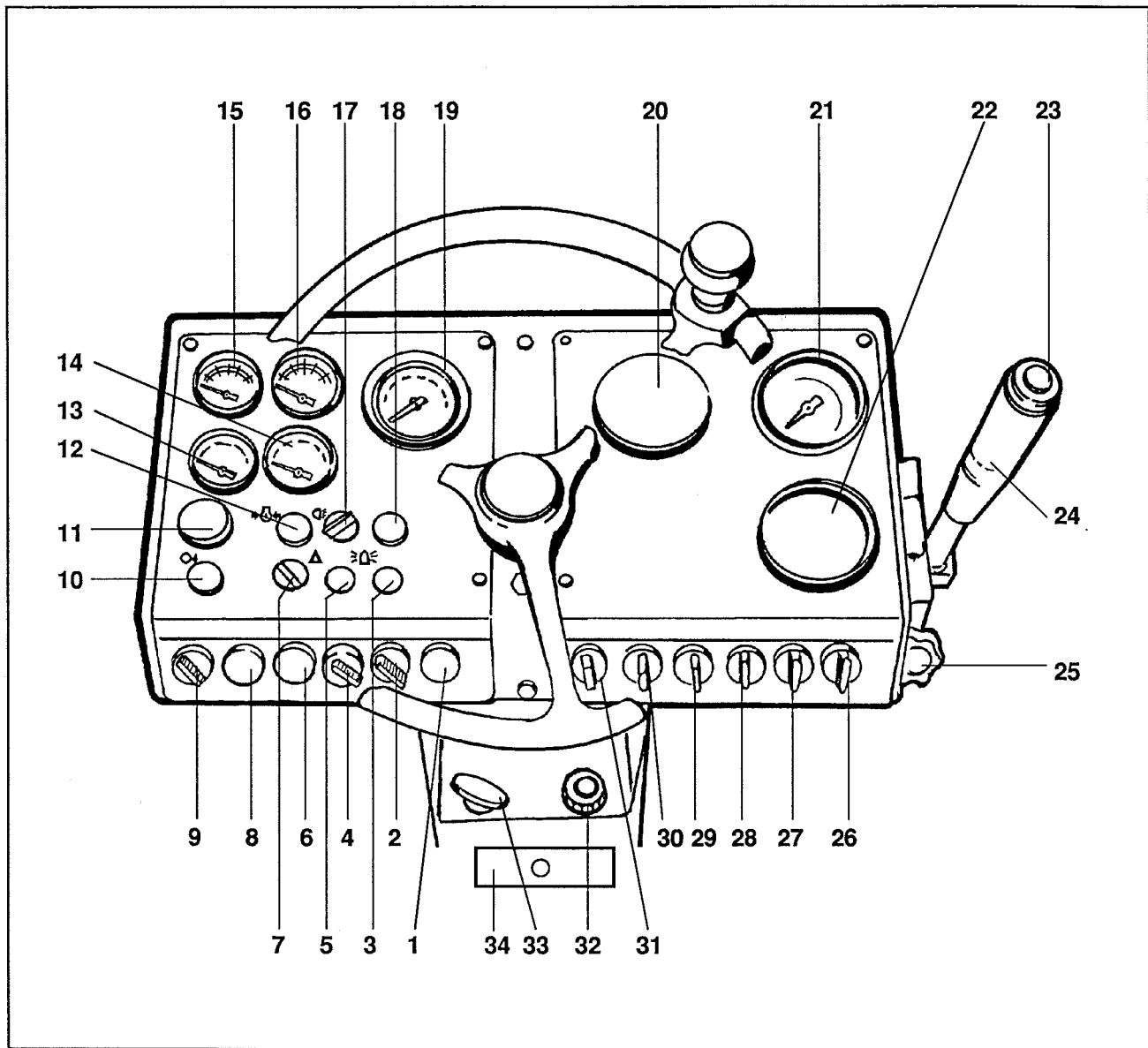





Fig. 1 Instruments and controls

Item in fig. 1	Designation	Symbol	Function
30	Watering (Control switch)	<p>MAN O AUT</p> 	<p>Controls flow of water to the drum. MAN mode provides continuous watering.</p> <p>Watering is switched off in O mode.</p> <p>AUT mode provides automatic switching ON/OFF via the forward/reverse control.</p>
31	Vibration/Frequency meter switch (Optional)	FREQ METER	Engages vibration/frequency meter.



Item in fig. 1	Designation	Symbol	Function
32	Engine throttle		Release/lock with centre button. Pull out to increase engine revs. Push in to decrease. Turn/screw the knob for fine adjustment. Anticlockwise = Increase. Clockwise = Decrease.
33	Engine stop (Deutz)		Pull out to stop the engine.
34	Fuse box		Contains fuses of the electrical system.

## BEFORE STARTING

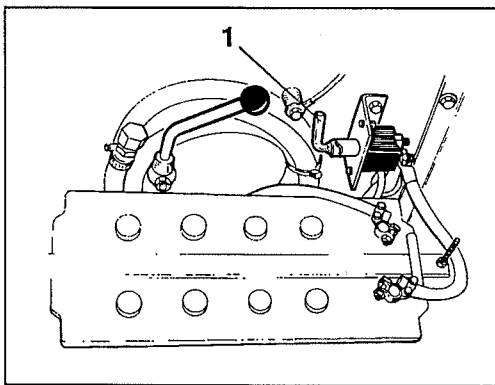


Fig. 2 Battery box  
1 Battery disconnect switch

1. Ensure that the daily service has been carried out, see Maintenance Instructions.
2. Check that the battery disconnect switch is ON.

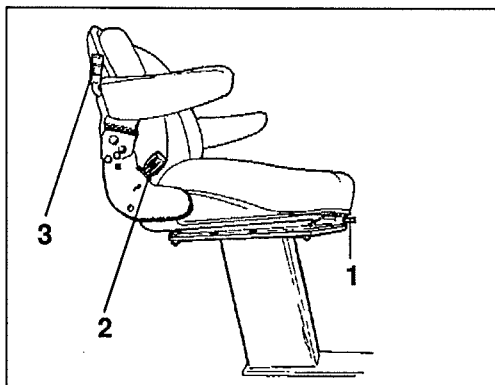


Fig. 3 Operator's seat  
1 Lever - Length wise adjustment  
2 Knob - Back slope  
3 Lever - Cushioning

3. Adjust the operator seat so that all controls can be easily reached.

The seat can be adjusted as follows:

- Length wise
- Back slope
- Cushioning to suit weight of operator.

## STARTING

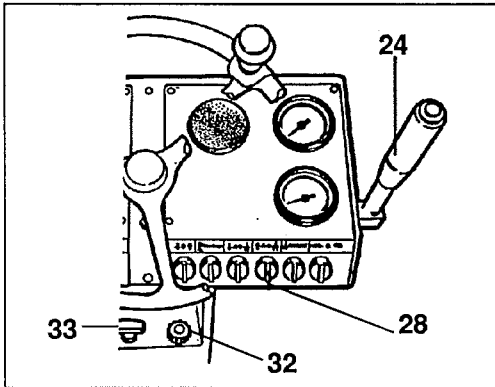


Fig. 4 Control panel, right  
 24 Forward/reverse control  
 28 Amplitude selector  
 32 Engine throttle  
 33 Stop control (Deutz)

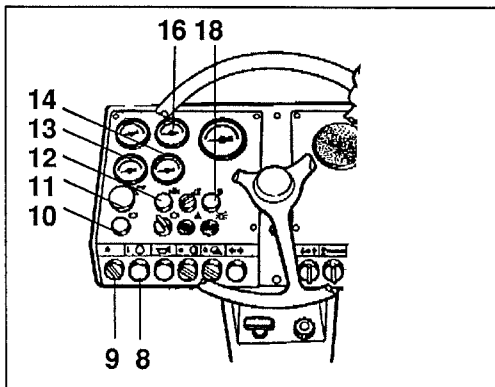


Fig. 5 Control panel, left  
 8 Start button  
 9 Main switch  
 10 Warning lamp, brake  
 11 EMERGENCY STOP  
 12 Warning lamp, oil pressure  
 13 Voltmeter  
 14 Fuel gauge  
 16 Temperature gauge, engine  
 18 Warning lamp, air cleaner

1. Set the forward/reverse control (24) in neutral. The engine can only be started with the control in neutral.
2. Set the amplitude selector (28) to neutral.
3. Check that the stop control (33) is fully pressed in (Deutz).
4. Press the centre button of the engine throttle (32) and rev up to 1/4 throttle.
5. Turn the switch (9) to position I. Check that meters (13) and (14) show readings and that the oil pressure lamp (12) and brake warning lamp (10) light.

**CAUTION**



If the brake warning lamp (10) does not light, press the EMERGENCY STOP (11) and the lamp should light.

6. Press the start button (8) and release immediately the engine starts.

**CAUTION**



Wait a few seconds before trying again if the engine does not start immediately.

7. Run the engine warm at about 1000 r/min for 5 to 10 minutes depending on ambient temperature. Check while warming up that the voltmeter (13) shows 13 to 15 V, that warning lamps (12) and (18) are out.
8. The filter must be cleaned or changed if the air cleaner warning lamp (18) lights, see Maintenance Instructions.
9. Check that the engine temperature gauge (16) shows a reading.

**CAUTION**



Deutz: Switch (9) must not be switched to the O position while the engine is running.

## DRIVING

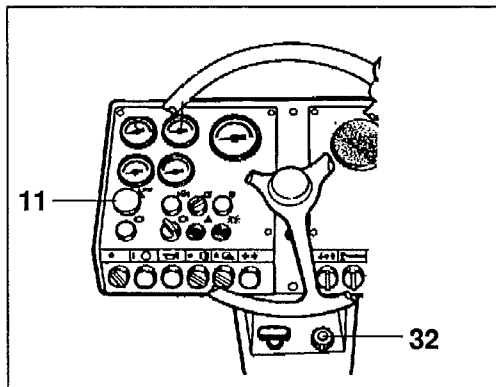


Fig. 6 Control panel, left  
11 EMERGENCY STOP  
32 Engine throttle

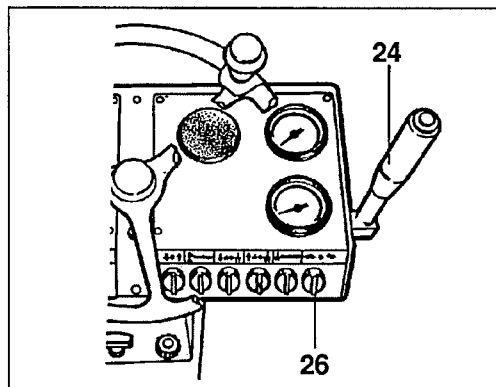



Fig. 7 Control panel, right  
24 Forward/reverse control  
26 Speed selector


1. Set the engine speed control (32) to give 2400 r/min. Adjust finely by turning the control: Anticlockwise = increase. Clockwise = decrease.
2. Pull out the EMERGENCY STOP (11).
3. Ensure that the steering is working properly by turning the steering wheel once to the left and once to the right while the machine is standing still.

4. Set the speed selector (26) to the desired position:  
High mode about 0-18 km/h (0-11 mph).  
Low mode about 0-8 km/h (0-5 mph).

**WARNING**  HIGH MODE MAY ONLY BE USED FOR TRANSPORT DRIVING ON AN EVEN SURFACE.

**WARNING**  MAKE SURE THAT THE AREA IN FRONT OF AND BEHIND THE ROLLER IS CLEAR.

5. Carefully move the forward/reverse control (24) to the desired direction of travel. Speed increases the further the control is moved from neutral.

**CAUTION**  Speed must always be regulated with the forward/reverse control and not by changing speed of the engine.

## DRIVING, contd.

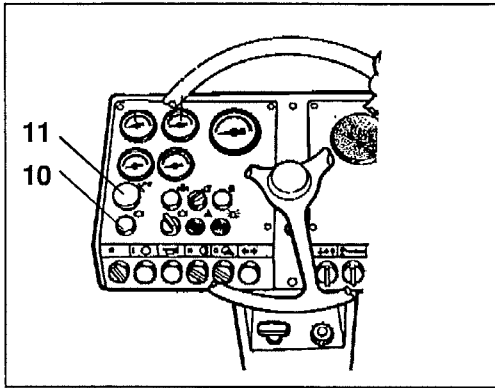


Fig. 8 Control panel, left  
10 Brake warning lamp  
11 EMERGENCY STOP

6. Test operation of the emergency brake by pressing EMERGENCY STOP (11) while the roller is moving slowly forward or backward (-Be prepared for an abrupt stop!). This test must be made sufficiently often to ensure that the brakes are working at full capacity.

The roller must stop immediately and the warning lamp (10) should light.

7. The forward/reverse control must be reset to neutral to permit further operation.

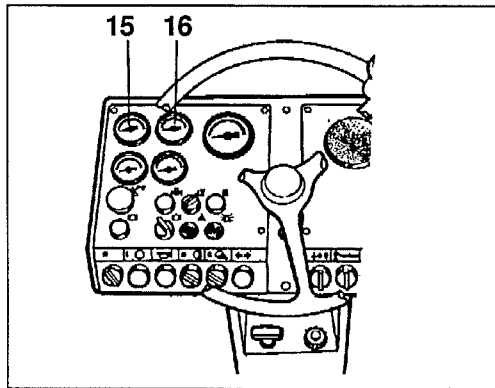


Fig. 9 Control panel, left  
15 Temperature gauge, hydraulic fluid  
16 Temperature gauge, engine

8. Check while driving that gauges show normal readings and that warning lamps do not light. In the event of faults, see "Instruments and Controls". Maximum temperature (15) of hydraulic fluid approx. 85°C (185°F).

Cummins:

Coolant temperature (16) max. approx. 100°C (210°F).

Deutz:

At normal working temperature the meter (16) indicates the green zone. The engine is too hot if the reading increases into the red zone and must be stopped immediately. Locate the cause. See the Engine Manual.

CAUTION



If the horn sounds, this may be an indication that the fan belt has broken. Stop the engine immediately, check and correct the fault. See Deutz Manual.

## DRIVING/VIBRATION

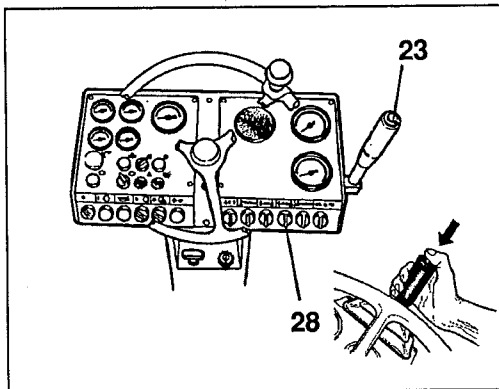


Fig. 10 Control panel  
23 Vibration ON/OFF  
28 Amplitude selector

### CAUTION



Vibrating is not permitted while the machine is standing still.

1. Set vibration of the drum to high or low amplitude with the switch (28).
2. Start vibration with the push button (23) while the roller is in motion.

### CAUTION



Amplitude high/low should not be changed while the vibration motor is running. Wait until vibration stops before changing the setting.

3. Vibration need not be switched off while changing the direction of travel.

## BRAKING

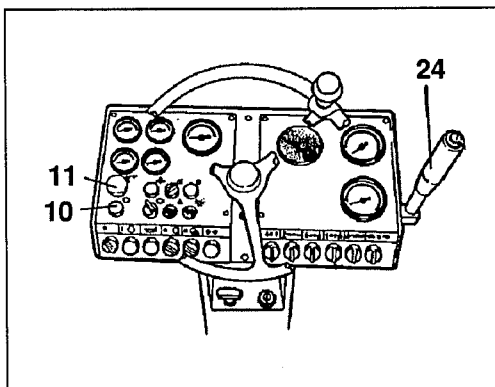


Fig. 11 Control panel  
10 Indication lamp, brake  
11 EMERGENCY STOP  
24 Forward/reverse control

Braking is normally made with the forward/reverse control (24). The roller is braked to a standstill by the hydrostatic transmission when the control is moved to neutral.

In addition, a multi-disc brake is applied when the EMERGENCY STOP (11) is pressed. The lamp (10) will light up.

### EMERGENCY STOP

#### WARNING



PRESS THE EMERGENCY STOP BUTTON (11) IN THE EVENT OF DANGER. BE PREPARED FOR AN ABRUPT STOP.

Hold the steering wheel firmly as the machine brakes. Reset the forward/reverse control to neutral after emergency braking. Pull out the emergency stop button.

## STOPPING

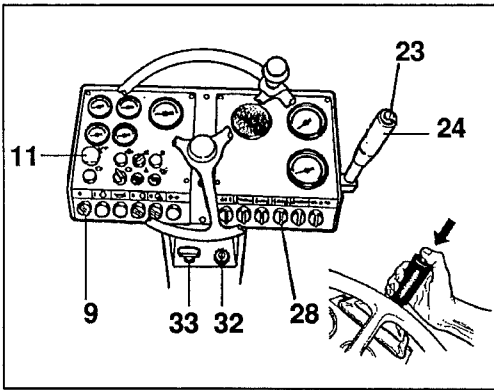


Fig. 12 Control panel

- 9 Power Switch (Cummins, stop)
- 11 EMERGENCY STOP
- 23 Vibration ON/OFF
- 24 Forward/reverse control
- 32 Engine throttle
- 33 Stop control (Deutz)

1. Press (23) to switch vibration off.
2. Stop the roller by moving the forward/reverse control (24) to neutral.
3. Push in the engine speed control (32) until the engine runs at idling speed 800 to 1000 r/min. Allow the engine to run for a few minutes.
4. Press the EMERGENCY STOP (11).
5. Pull out the stop control (33) (Deutz only).
6. Turn the switch (9) to position O.

**CAUTION**



Deutz: The switch (9) must not be turned to position O while the engine is running.

## ELECTRICAL SYSTEM

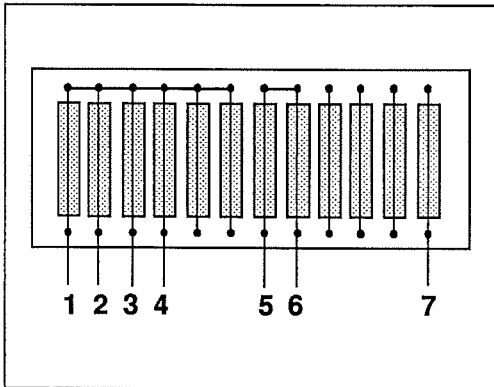


Fig. 13 Fuse box

- 1 Vibration control
- 2 Instruments
- 3 Horn/V-belt monitor (Deutz)
- 4 Stop solenoid (Cummins)
- 5 Brake valve
- 6 Speed selector
- 7 Working lights (Optional equipment)

Functions of the roller are on the whole electro hydraulically controlled.

Fuses for protection of electrical components, instruments and monitoring are concentrated in the fuse box (34), fig. 1. Check the fuses first in the event of malfunction. Figure 13 shows the identity of each fuse.

## PARKING

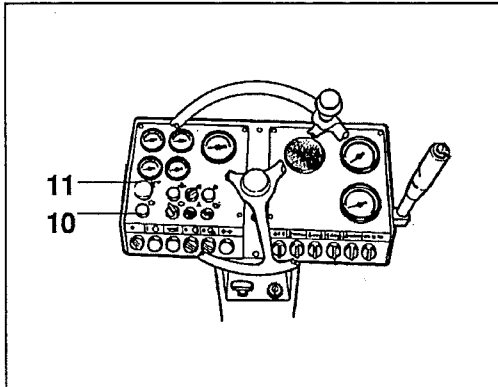


Fig. 14 Control panel  
10 Brake warning lamp  
11 EMERGENCY STOP

WARNING



NEVER LEAVE THE MACHINE WITH THE ENGINE RUNNING. RISK OF DRIFTING.

For short-term parking with the engine running the EMERGENCY STOP (11) must always be pressed. The brake warning lamp (10) must light.

The roller is equipped with a parking brake which is applied automatically as the engine is stopped or when hydraulic pressure drops in the drive system for any other reason.

Fit chocks against the drums when parking on a slope with the engine switched off. Make sure the roller is parked safely and is not a traffic hazard.

Remember the risk of frost during the winter and make sure the engine radiator is filled with a suitable anti-freeze mixture. See Engine Manual.

Switch off the battery disconnect switch.

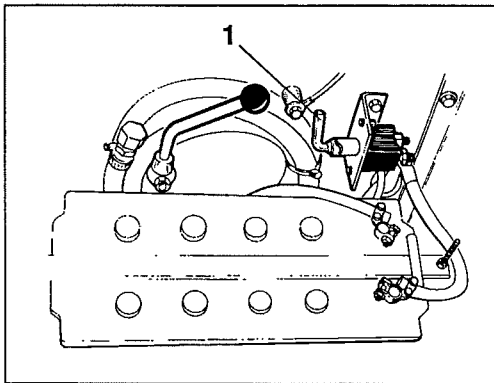


Fig. 15 Battery box  
1 Battery disconnect switch

# HOISTING

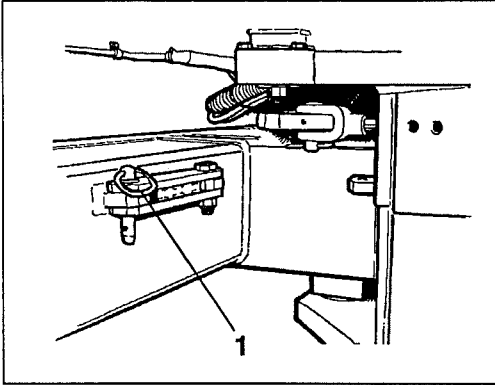


Fig. 16 Articulated joint/interlock  
1 Driving mode

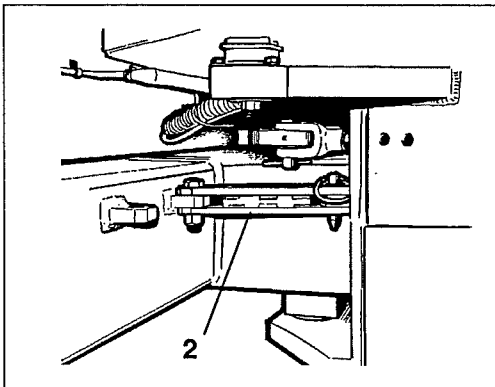


Fig. 17 Articulated joint/interlock  
2 Hoisting mode

WARNING



LOCK THE STEERING TO PREVENT TURNING BEFORE HOISTING THE ROLLER. EXTEND THE ARM AND LOCK IT SECURELY TO THE STEERING LINK. CONNECT THE LIFTING CHAINS, MAKING SURE THAT NO PARTS CAN BE DAMAGED WHILE HOISTING.

CAUTION



Steel wires, chains, etc., must comply with current regulations.

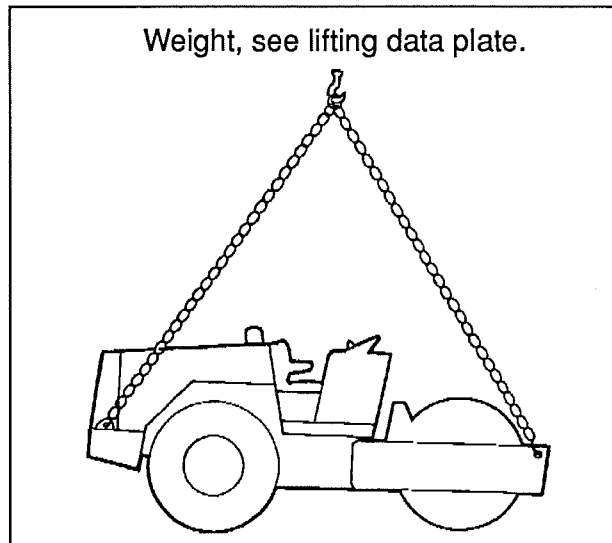


Fig. 18 Lifting

WARNING



MAKE SURE THAT HOISTING HOOKS ARE SECURELY ANCHORED. KEEP WELL CLEAR OF THE HOISTED MACHINE.

CAUTION



Remember to reset the interlock to the driving mode after hoisting.

## Driving after hoisting



## TOWING

### Method 1:

### Towing short distances with the engine running

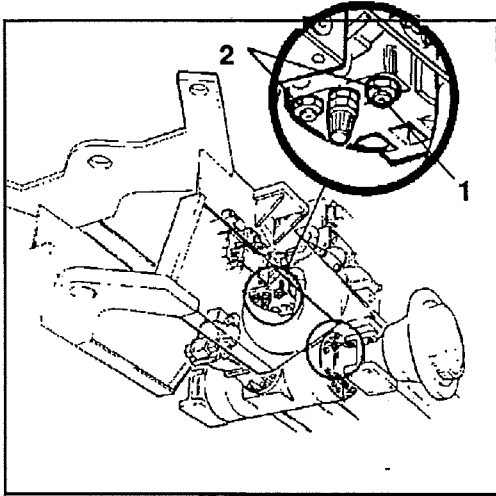


Fig. 19 Towing

- 1 Setting screw
- 2 Multi-function valve (MFV)

The roller may be moved up to 50 metres in the following way.

1. Run the engine at idling speed, whereby the brakes are automatically released.

WARNING



PRESS THE EMERGENCY STOP. CHOCK THE DRUM, THE MACHINE MAY OTHERWISE START TO ROLL WHEN THE MULTI-FUNCTION VALVE IS LOOSENED.

2. Loosen the setting screws, three turns anticlockwise. Block the multi-function valve. The multi-function valves are located on the bottom of the transmission pump.
3. Pull out the EMERGENCY STOP.
4. The machine can now be towed.

WARNING



WHEN TOWING DOWNHILL THE MACHINE MUST BE PREVENTED FROM MOVING TOO FAST BY COUNTER-BRAKING. SEE FIGURE.

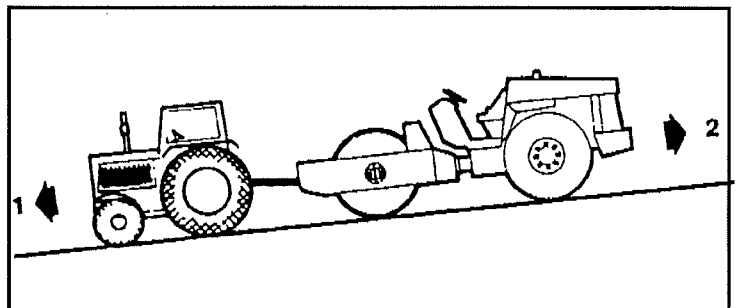


Fig. 20 Towing

- 1 Direction of travel
- 2 Counter-braking

## TOWING, contd.

### Method 2: Towing short distances when the engine is not working

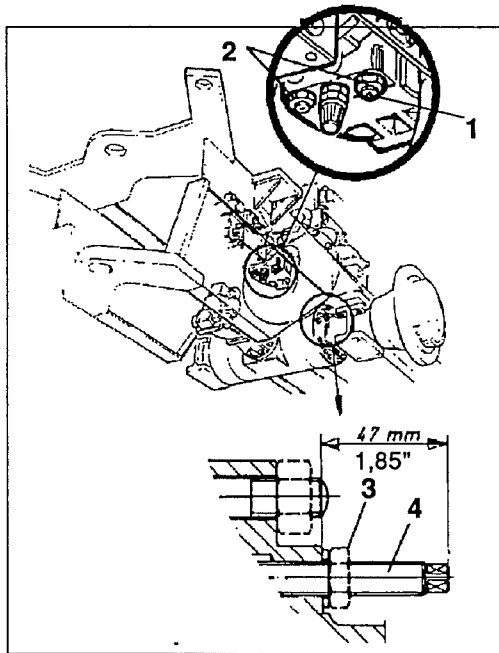


Fig. 21 Towing  
1 Setting screw  
2 Multi-function valve (MFV)  
3 Lock nut  
4 Screw

WARNING



CHOCK THE DRUM. THE MACHINE MAY OTHERWISE START TO ROLL WHEN THE BRAKES ARE RELEASED.

1. Loosen the lock nut and screw in the bolts about 30 mm (1.2 ") on both sides of the differential housing.
2. Loosen the setting screws about three turns anti-clockwise. If necessary block the multi-function valve. The multi-function valves are located on the bottom of the transmission pump.

WARNING



WHEN TOWING DOWNHILL THE MACHINE MUST BE PREVENTED FROM MOVING TOO FAST BY COUNTER-BRAKING. SEE FIGURE.

### After towing

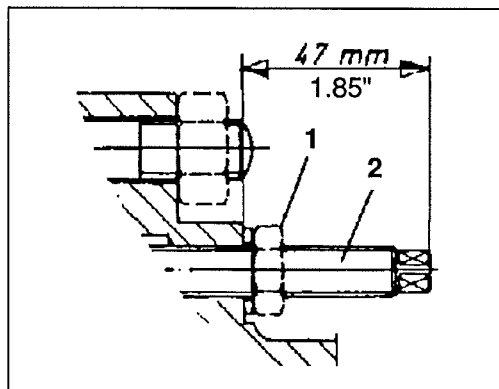
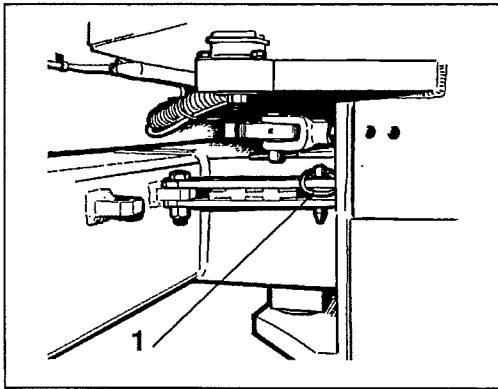


Fig. 22 Towing  
1 Lock nut  
2 Screw

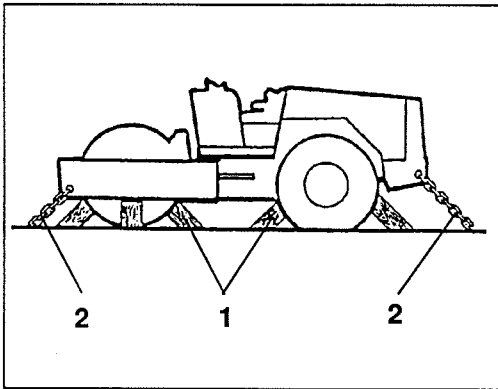
Screw in the setting screws on the transmission pump, unscrew the adjusting screws on both sides of the differential housing to 47 mm (1.85") and tighten the lock nuts.

## TRANSPORT



**Fig. 23 Articulation/interlock**  
**1 Mode for transporting and hoisting**

1. Lock the articulation.
2. Chock the drum and wheels; in front, behind and at the sides.
3. Support weight of the frame to prevent excessive strain on the rubber suspension. Clamp down the roller at all four corners.



**Fig. 24 Towing**  
**1 Support**  
**2 Chain and binders**