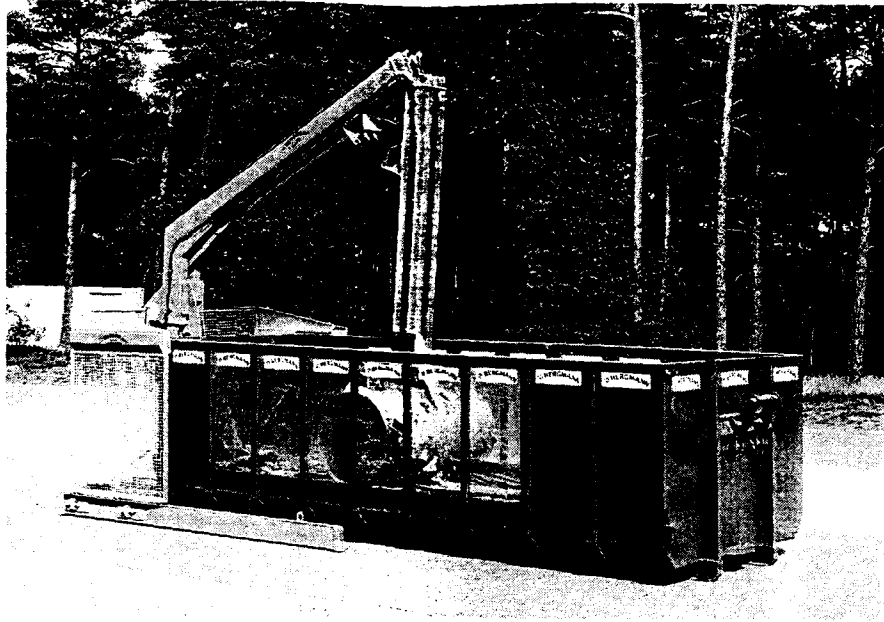


Operating & Maintenance Manual



JUMBO - ROLL - PACKER



IMPORTANT DOCUMENT

Machine model	RP 7700 - 107
Year	2002
Operating instructions - No.	107 48

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1. Preface

The present machine is a compaction unit which has been exclusively designed for the compaction of valuable substances and wastes in open containers, and therefore it is only intended for this purpose. Any other use or application beyond this must be considered as improper use. BERGMANN will not accept any responsibility for any damages resulting from this.

Proper use also includes

- observing all operating instructions as set out in the Operating and Maintenance Manual,
- observing the service and maintenance instructions
- the prohibition of any extensions or reconstructions of the machine.

Awareness of the basic safety instructions and regulations is of utmost importance in order to handle the machine safely and to guarantee trouble-free operation. These operating instructions contain the most important information needed to operate the machine in compliance with the safety instructions.

**For this reason these operating instructions should
be placed in the hands of the machine
operator and kept safely !**

There may be deviations in technical data, illustrations and dimensions due to continual further development.

When ordering spare parts please quote the machine serial number, the spare parts list page and the name of each item with its part number.

Label:



2. Introduction

2.2 Background, benefits and features

It has been a long-accepted practice to transport waste in open top containers. The majority of these containers are filled with up to 80 % air and only 20 % waste. Users are surprised to see how quickly their containers are filled up, annoyed to see how much waste is blown about and frustrated by the increasing costs of collection and disposal.

A simple idea, first put into production in 1982, has proved to be a winner with customers and contractors alike. There are now well in excess of 2000 BERGMANN ROLL - PACKER successfully being used in the industrial and service sectors throughout Europe.

And the idea ? Compact the waste in the container at the user's premises before transportation to the recycling station, incinerator or landfill site. The advantages to the user are manifold. Firstly, the existing method of collection is maintained. Secondly, the number of collections is reduced. And thirdly, the user's employees can be freed for other work as the machine does not require constant supervision.

Waste material can be continuously loaded from both sides of the container using skips, fork lifts or conveyors. There is no need to cut, tear or break up bulky items first, a significant point in the drive to reduce costs and improve the general appearance of the surrounding area.

The BERGMANN ROLL - PACKER is the perfect solution for dealing with tough or bulky waste. Wooden pallets, crates, cans, sheet metal, cardboard boxes and sheets, household waste and even deep sea packing cases - it can cope with them all. As soon as the material is in the container the continuous rolling action of drum gets to work. The drum teeth split, separate and spread the material over the whole length of the container. The weight of the drum and the pendulum arm does the rest - obviously, the longer it runs, the better the compaction.

Depending on the material, the programmed running time and the loading cycle, compaction ratios of between 3 and 5 : 1 can be obtained. Weights of 10,000 kg per 35 m³ container have been achieved in everyday use.

The ROLL - PACKER is supplied with a lockable isolator, a lockable emergency stop button to prevent unauthorized use, container-operated interlocks and a wire mesh enclosure at the hydraulic power pack end as standard. The machine is designed for programmed or continuous running and has a drum travel adjustment to suit different container lengths. Optional extras include automatic lifting of the drum at the end the cycle, an oil cooler and an oil heater. A further option is the modified ROLL - PACKER designed to run on rails so as to serve more than one container.

3. Safety

3.1 List of symbols and notes

The following signs for hazards are used in the operating instructions and on the machine:



This symbol stands for a possible hazard for the life and health of persons.

The non-observance of these instructions can result in serious effects to health and even life-threatening injuries.



This symbol stands for a possible hazard.

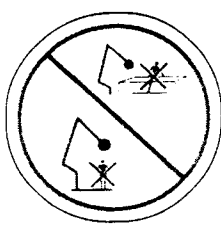
The non-observance of these instructions can result in slight injuries or damages to property.



This symbol points to important facts.



This symbol warns about dangerous electrical voltage.



This symbol means that it is prohibited to enter the container and to stay below the lifted compaction drum.

3. Safety

3.2 Rules for safety



The safety and availability of the machine depends on the observance of these regulations.
You will also find the most important requirements as a sticker on your machine.

3.2.1 Organisational measures

- * Only trained and instructed personnel may operate the machine. The operating staff must have read and understood the operating instructions.
- * The operating staff has to wear the necessary protective equipment, i.e. safety shoes and gloves. This equipment must be provided by the operator.
- * In addition to the operating instructions the general and local regulations for the prevention of accidents and the protection of the environment must be observed.
- * It is not allowed to make any modifications, extensions or reconstructions on the machine without the prior written consent of BERGMANN. This is also valid for welding works at load bearing parts.
- * The machine may be fixed to the floor only after agreement with BERGMANN.
- * The minimum charging height of the container must be 500 mm (20").
- * The substances and materials used must be used and disposed of properly.
- * It is prohibited to compact larger quantities of scrap iron and rubble as well as substances which are subject to special disposal regulations.
- * Mains supply cables must be rubber sheathed to specification HO7 RN-F or equivalent.
- * An earth leakage protection device with a 30 mA rating must be provided by the user.

3.2.2 Safety and protective devices

- * The JUMBO-ROLL-PACKER may only be operated with a container.
- * It is prohibited to stay in the working range of the machine and below the lifted compaction drum.
- * Prior to switching on make sure that there is nobody in the container.
- * It is not allowed to remove or change any safety devices. The safety devices must be fully-functioning.
- * In case of trouble the machine must be stopped immediately and the trouble must be cleared.
- * Machine parts which are not in a perfect condition must be replaced immediately.
- * In consideration of the safety distances (see point 3.3 "Safety distances") the use of ramps and platforms is allowed.
- * All handles, steps, railings, pedestals, platforms and ladders must be kept free of soiling, snow and ice.
- * The safety and danger instructions on the machine have to be kept in a legible condition and must be replaced if necessary.
- * If the JUMBO-ROLL-PACKER is operated unintentionally in areas which are accessible to the public, such as market places etc., special safety regulations must be observed.

3. Safety

3.2.3 Hazards through electrical energy

- * Repairs or maintenance on the electrical supply system may be carried out by a qualified electrician only.
- * The electrical equipment of the machine must be inspected at regular intervals. Any faults such as loose connections and/or scorched cables have to be cleared immediately.
- * The switch cabinet must always be kept closed. Access is only allowed for authorised staff.
- * Plugged connections have to be loosened and/or plugged in when the current has been switched off.
- * When connecting equipment to the mains the local EVU-regulations must be observed.
- * The adjustment of the motor protection switch must not be changed.

3.2.4 Hazards through hydraulic energy

- * Only staff with specialised know-how and experience may work on the hydraulic equipment.
- * The hydraulic equipment must be inspected at regular intervals. Any faults such as chafe marks on the hoses or leakages at the screwed connections must be corrected immediately.
- * System sections and pressure pipes that can be opened must be depressurised prior to the start of repair. Liquids that escape under high pressure can penetrate the skin and may cause severe injuries.

3.2.5 Maintenance and repair

- * The above mentioned maintenance and service must be carried out within the prescribed time limit (see chapter 11 "Maintenance and care").
- * Maintenance and repair may be carried out only by qualified staff with the corresponding know-how. On this occasion the machine must be disconnected from the mains and be secured against being switched on by mistake.
- * As far as necessary the repair area must be secured.
- * If required a certified ladder or platform appropriate for the respective purpose must be used. These auxiliaries have to be supplied by the operator.
- * Larger assemblies must be fixed and secured carefully with lifting devices when being replaced.
- * Hydraulic hoses must be replaced every 6 years as a minimum even if no safety relevant faults are visible.
- * Only use original spare parts in case of replacement.
- * On completion of the maintenance all safety devices must be checked with regard to their function.

3.2.6 Instructions in case of emergency

- * In case of emergency always press STOP-button.
- * Burning oil must be extinguished using a CO₂ extinguisher or dry powder extinguisher.
- * Fire in the electrical control system must be fought by means of a CO₂ extinguisher.

3. Safety

3.3 Safety distances

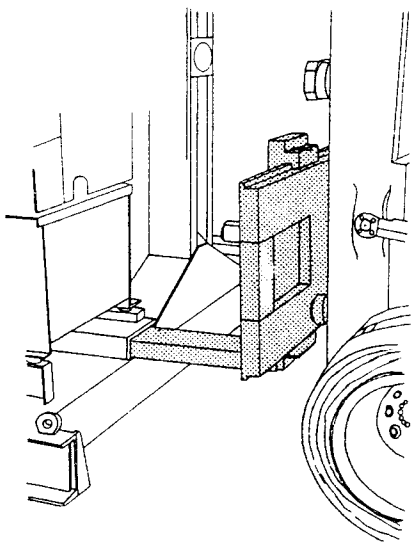
Reaching across protective constructions										
Height of the danger point a [mm] / [inch]	Height of the protection frame b ¹⁾ [mm] / [inch]									
	Horizontal distance c from the danger area [mm] / [inch]									
2700 / 106	-	-	-	-	-	-	-	-	-	-
2600 / 102	900 / 35	800 / 32	700 / 28	600 / 24	600 / 24	500 / 20	400 / 16	300 / 12	100 / 4	-
2400 / 95	1100 / 43	1000 / 39	900 / 35	800 / 32	700 / 28	600 / 24	400 / 16	300 / 12	100 / 4	-
2200 / 87	1300 / 51	1200 / 47	1000 / 39	900 / 35	800 / 32	600 / 24	400 / 16	300 / 12	-	-
2000 / 79	1400 / 55	1300 / 51	1100 / 43	900 / 35	800 / 32	600 / 24	400 / 16	-	-	-
1800 / 71	1500 / 59	1400 / 55	1100 / 43	900 / 35	800 / 32	600 / 24	-	-	-	-
1600 / 63	1500 / 59	1400 / 55	1100 / 43	900 / 35	800 / 32	500 / 20	-	-	-	-
1400 / 55	1500 / 59	1400 / 55	1100 / 43	900 / 35	800 / 32	-	-	-	-	-
1200 / 47	1500 / 59	1400 / 55	1100 / 43	900 / 35	700 / 28	-	-	-	-	-
1000 / 39	1500 / 59	1400 / 55	1000 / 39	800 / 32	-	-	-	-	-	-
800 / 32	1500 / 59	1300 / 51	900 / 35	600 / 24	-	-	-	-	-	-
600 / 24	1400 / 55	1300 / 51	800 / 32	-	-	-	-	-	-	-
400 / 16	1400 / 55	1200 / 47	400 / 16	-	-	-	-	-	-	-
200 / 8	1200 / 47	900 / 35	-	-	-	-	-	-	-	-
0	1100 / 43	500 / 20	-	-	-	-	-	-	-	-
¹⁾ Protective constructions with a height of less than 1000 mm / 39 inches are not included because these do not restrict the movement sufficiently. ²⁾ Protective constructions with a height of less than 1400 mm / 55 inches should not be used without additional safety measures.										
Reaching through openings										
Part of the body		Circle		Square		Slot				
	Opening e [mm] / [inch]	Safety distance r [mm] / [inch]								
Fingertip	$e \leq 4/0.16$	$\geq 2/0.08$		$\geq 2/0.08$		$\geq 2/0.08$				
	$4/0.16 < e \leq 6/0.24$	$\geq 5/0.20$		$\geq 5/0.20$		$\geq 10/0.39$				
Finger or hand	$6/0.24 < e \leq 8/0.31$	$\geq 5/0.20$		$\geq 5/0.20$		$\geq 20/0.76$				
	$8/0.31 < e \leq 10/0.39$	$\geq 20/0.79$		$\geq 20/0.79$		$\geq 80/3.15$				
	$10/0.39 < e \leq 12/0.47$	$\geq 80/3.15$		$\geq 80/3.15$		$\geq 100/3.94$				
	$12/0.47 < e \leq 20/0.79$	$\geq 120/4.75$		$\geq 120/4.72$		$\geq 120/4.72$				
Arm	$20/0.79 < e \leq 30/1.18$	$\geq 120/4.72$		$\geq 120/4.72$		$\geq 850^{1)} / 33.46^{1)}$				
	$30/1.18 < e \leq 40/1.57$	$\geq 120/4.72$		$\geq 120/4.72$		$\geq 850/33.46$				
	$40/1.57 < e \leq 120/4.72$	$\geq 850/33.46$		$\geq 850/33.46$		$\geq 850/33.46$				
¹⁾ If the length of the slot opening is ≤ 65 mm / 2.56 inches the thumb is regarded as a demarcation and the safety distance may be reduced to 200 mm / 7.87 inches. These safety distances of regular openings apply for persons from 14 years onward.										
Further information see EN 294										

4. Commissioning



Commissioning must only be carried out by a BERGMANN authorized dealer.

The following instructions have to be observed for the commissioning and in case of a later change in location:



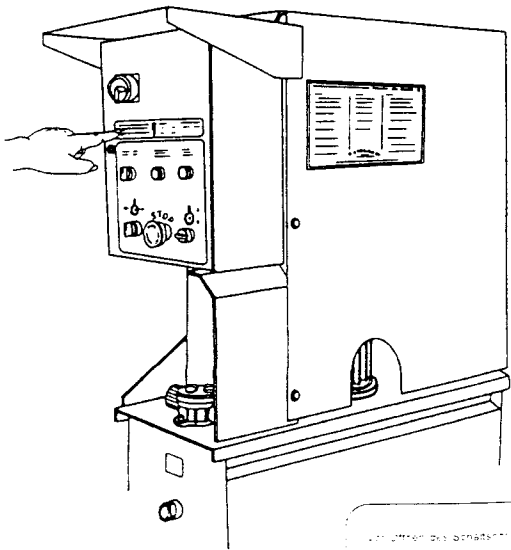
Transport the JUMBO-ROLL-PACKER to its location using a suitable fork lift truck. Ensure that the forks are positioned deep into the pockets provided for this purpose (see illustration).

The machine must be sited on a solid and level piece of ground.



Do not secure to the ground without first consulting the authorized dealer or the manufacturer.

The JUMBO-ROLL-PACKER is only operational when used in conjunction with a container. This must be positioned between the runners hard up against the machine base stop plate. Use without a container (minimum height 1,90 m, maximum height 2,70 m) is not possible.

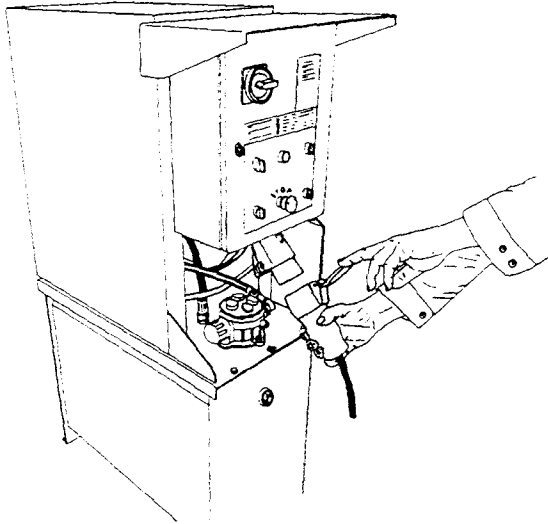


The supply and the machine voltages must be the same. Machine voltage is as indicated on the operation label fixed to the switching cabinet.

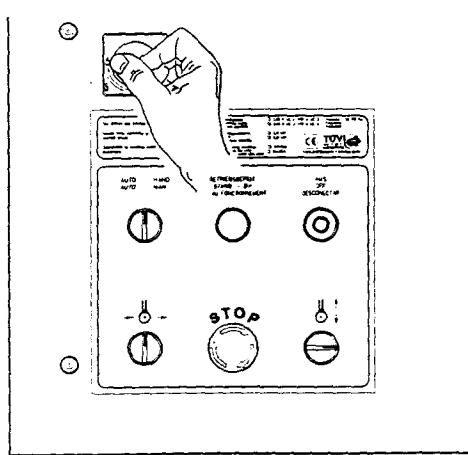
e.g. 230 V

<p>Ein offener Schaltschrank ist nicht zu öffnen. (Do not open the switch cabinet with the cover open.) Die Spannung an der Maschine beträgt 230 V AC (Voltage at the machine is 230 V AC)</p>		<p>Leistungsspannung: 230 V AC Nennleistung: 1,5 kW Leistungsfaktor: 0,95 Frequenz: 50 Hz Schutzart: IP20 Schutzklasse: II Schutzart: IP20 Schutzklasse: II Schutzart: IP20 Schutzklasse: II</p>	<p>CE TÜV GS www.bergmann-online.com</p>
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4. Commissioning

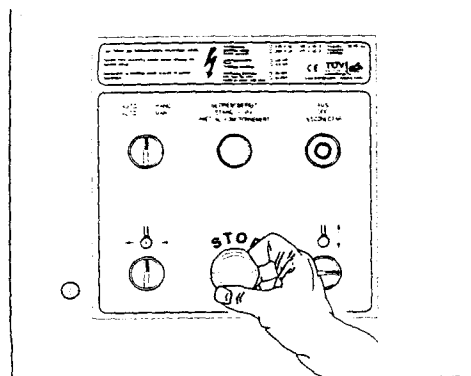


Connect to the electrical supply.



To commission the machine

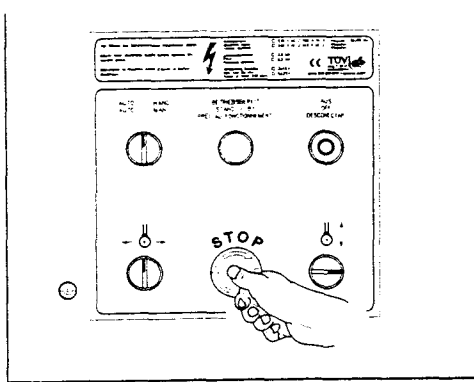
- a) switch on the isolator and



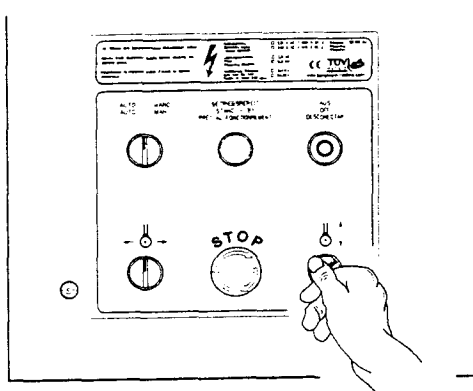
- b) release the STOP - button.

4. Commissioning

11



In case of danger immediately press the STOP button.



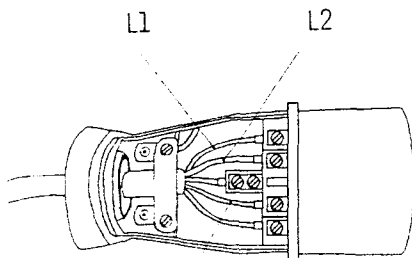
Test the direction of rotation of the motor.

The direction is correct when,

- * the drum is raised by turning the LIFT switch or
- * the drum rotates as it sinks down (use the AUTO - MAN switch to do this).



If this is not the case the machine must be disconnected from the mains immediately and the rotational direction of the motor must be changed.



At the same time two of the three phases in the supply line are exchanged.

This work may be carried out by a qualified electrician only !

In order to make optimum use of the container length, there is a facility to adjust the roller travel.

See point 5.1 "Roller travel adjustment".

L3

5. Operation

5.1 Roller travel adjustment

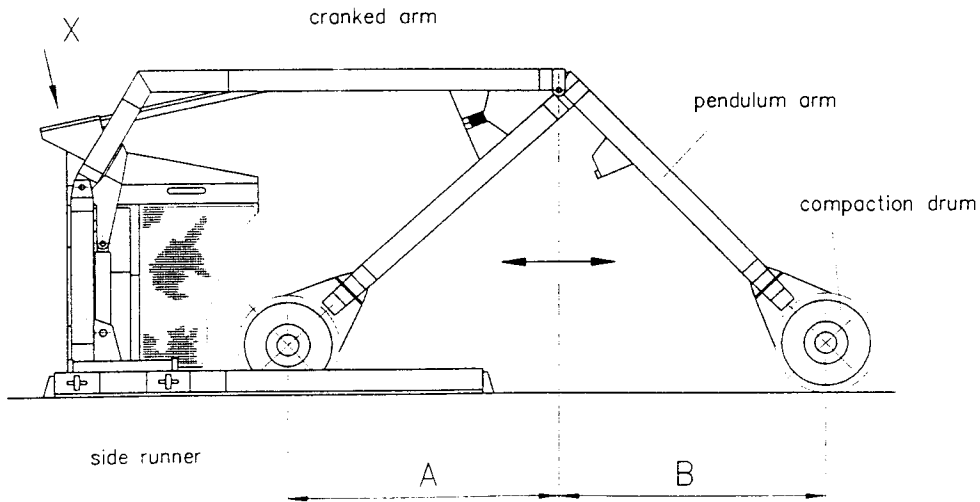
5.1.1 General

Because of the variation in container lengths there needs to be a way of adjusting the travel length.

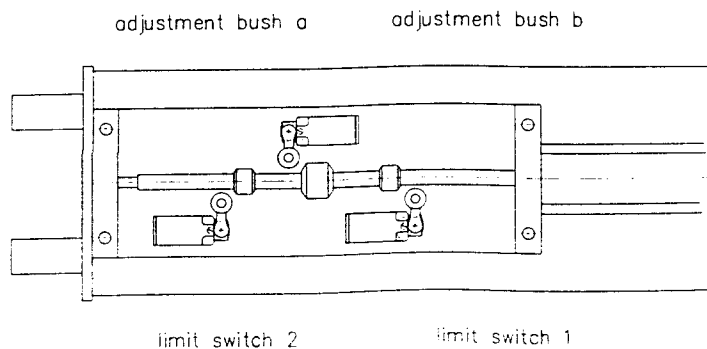
This is carried out by setting adjustment bushes 'a' and 'b' :

The nearer adjustment bush 'a' is moved towards limit switch 2, the shorter the travel length A.
The further away, the longer the travel length A.

Similarly, the nearer adjustment bush 'b' is moved towards limit switch 1, the shorter the travel length B.
The further away, the longer the travel length B.

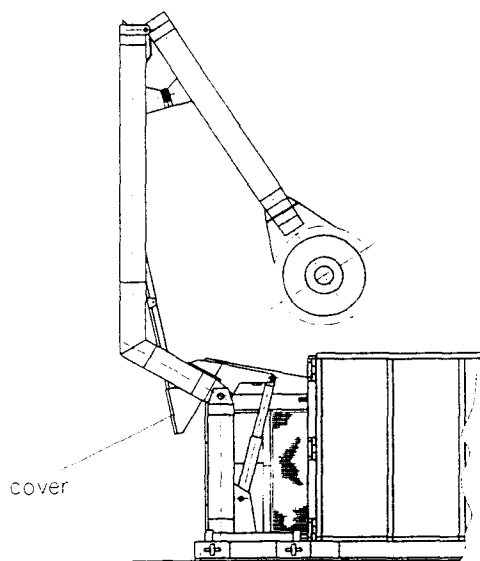


View X



5. Operation

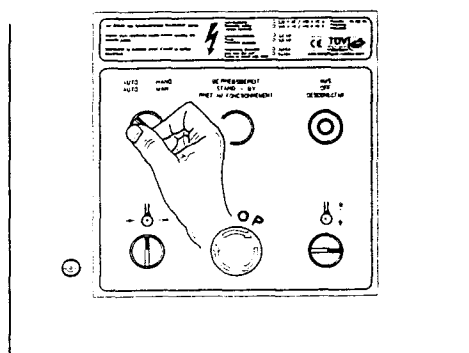
5.1.2 Setting the travel length



1) Fill the container with approx. 500 mm material.

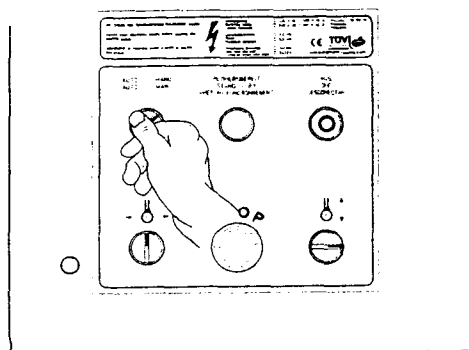
2) Unscrew the cover over the limit switches.

Set adjustment bush 'b' in the direction of the middle limit switch.



3) Switch isolator on and start the JUMBO-ROLL-PACKER by turning the AUTO or MANUAL switch.

4) The drum lowers itself and rotates away from the column.



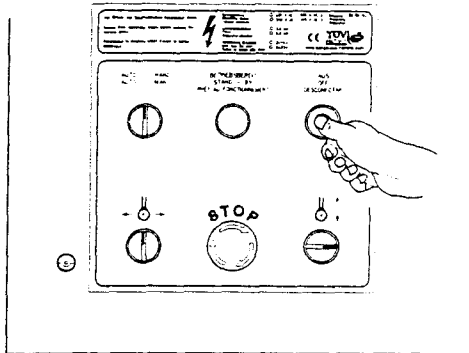
5) Depending on the container length set the max. travel length B.



Take note of the safety distances at the container end walls when setting the travel length. This must be at least 300 mm at both ends.

5. Operation

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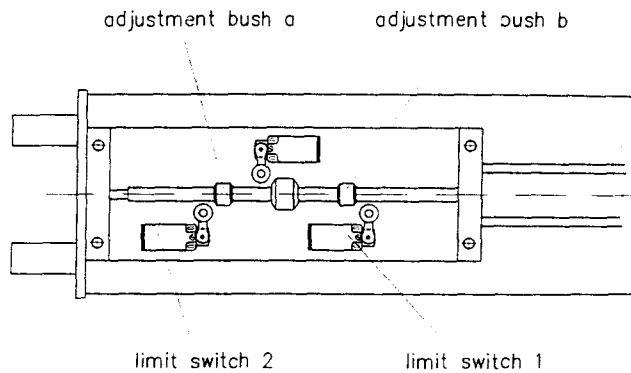


6) When the required length is reached, stop the drum by pressing the OFF button.

7) Then move adjustment bush 'b' to limit switch 1 until an audible click indicates that switching has occurred.

8) Start the machine again by turning the AUTO or MANUAL switch.

9) The drum moves towards the column.



10) The JUMBO-ROLL-PACKER should reverse shortly before the pendulum arm touches the rubber buffer on the cranked arm.

If this is not the case, re-set limit switch 2:

The drum moves towards the column.

Switch the machine off at least 300 mm before the container end wall. Move adjustment bush 'a' to limit switch 2 so that this too clicks audibly.

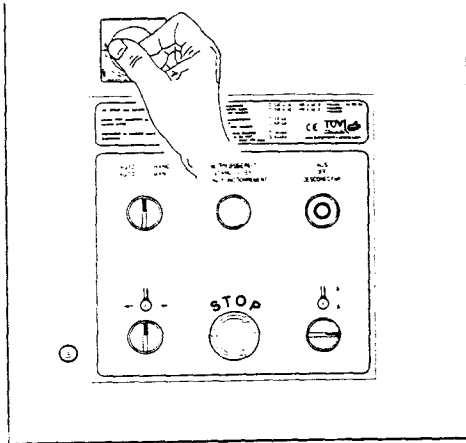
11) Then re-start the JUMBO-ROLL-PACKER and check whether the travel length adjustments are satisfactory.



Adjustment bushes only permit travel length settings of up to approx. 6600 mm.

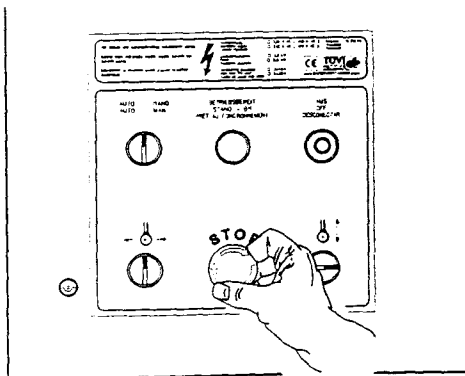
5. Operation

5.2 Using the machine



- 1) Fill the container with approx. 500 mm material.

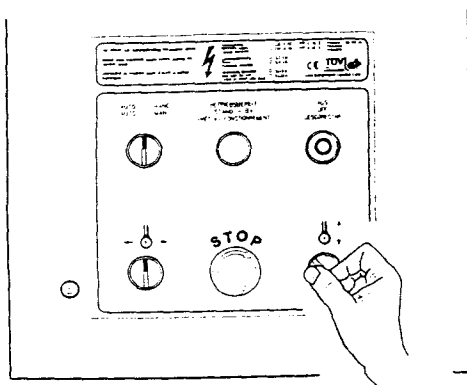
Switch on the isolator.



- 2) Release the STOP impact switch by turning the button to the right.



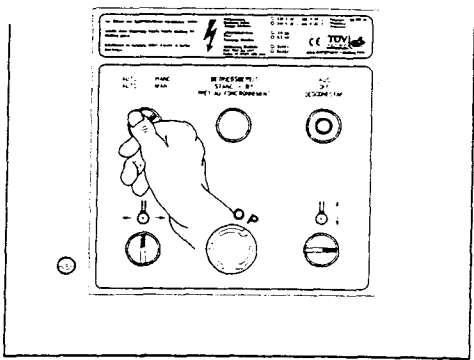
In case of danger immediately press the STOP button.



- 3) When the drum is in raised position it is wise to press the LOWERING button at first and to keep it pressed as long as the drum is lowered onto the material to be compacted.

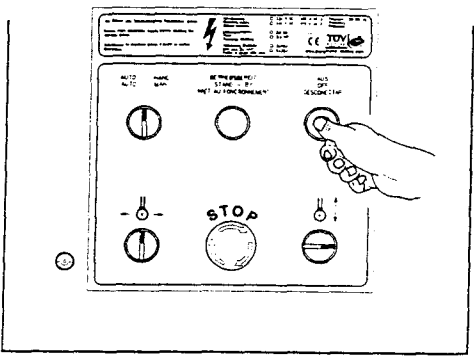
In contrast to the automatic lowering by means of the AUTO/MAN switch the drum does not rotate during this process.

5. Operation



+) Start the JUMBO-ROLL-PACKER on continuous or timed operation.

- * MANUAL = continuous operation
- Off using green OFF button

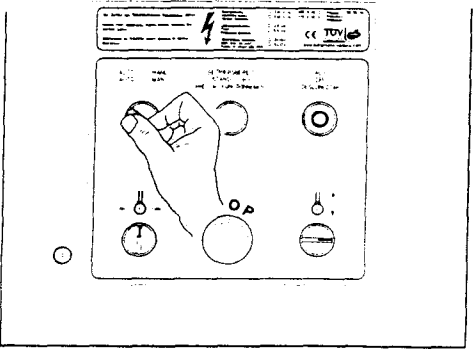


* AUTO = Automatic = timed operation

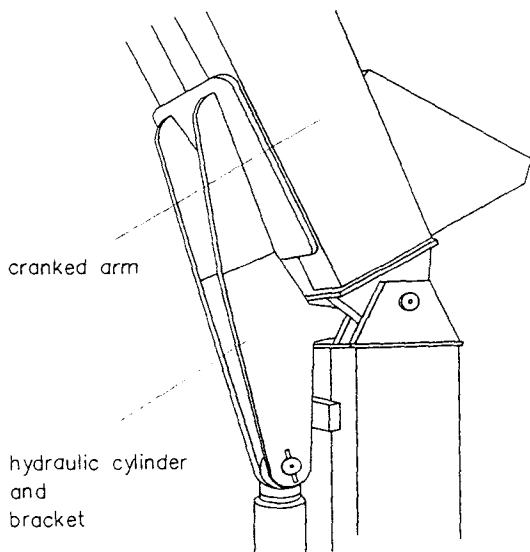
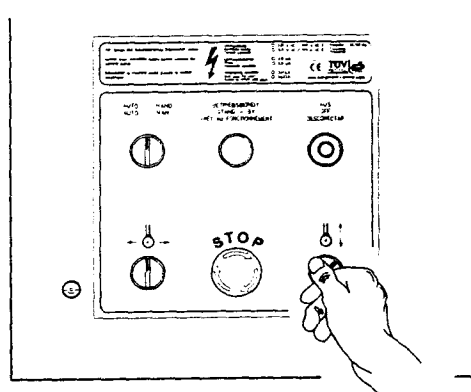
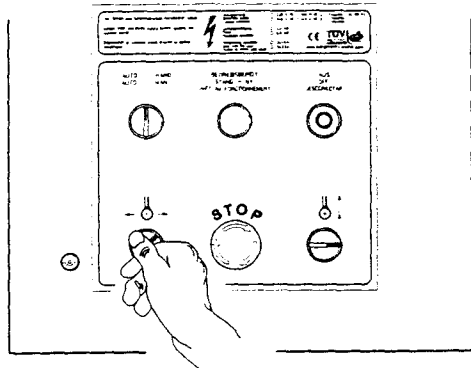
Off using green OFF button

or

automatic after time has lapsed.
The time can be set between 1 min. and and 10 hours; see also point 6.3 "The electrical control".



5. Operation



- 5) The container can now be fed continuously with material.

i The longer the compacting time, the higher the degree of compaction.

By turning the FORWARDS - BACKWARDS switch, the JUMBO-ROLL-PACKER can be switched in the opposite travel direction.

- 6) The compaction drum can be lifted from the material either manually (standard) or automatically (optional).

manual lifting :

- When the JUMBO-ROLL-PACKER drum is in the middle of the container, switch off the machine by pressing OFF.
- Turn the LIFT switch and hold until the hydraulic cylinder has engaged the cranked arm and lifted the drum to the end stop.

automatic lifting :

- Start the JUMBO-ROLL-PACKER with the AUTO switch. After the time has lapsed the drum stays in the middle of the container and is automatically lifted out until the end stop is reached.

- 7) The container can now be exchanged. Container height must be between 1,90 m minimum and 2,70 m maximum. Ensure that the container is pushed hard up against the stop plate.

6. Electrical Circuit

6.1 General



Maintenance or repairs on the electrical supply system may only be carried out by a qualified electrician with corresponding know-how. On this occasion the machine must be disconnected from the mains and be secured against reclosure.

The JUMBO-ROLL-PACKER is supplied with a total control system which takes care of the work process. The system is activated by releasing the STOP button and turning the MANUAL or AUTO switch. The isolator being in the ON position.

A lamp signal indicates that the machine is ready for use.

On AUTO the machine runs until the pre-set time has lapsed and switches itself off (see point 6.3). The process may be stopped before the end of the cycle by pressing the OFF button. After the time has lapsed, the compaction drum moves to the middle of the container. By turning the LIFT switch, the drum is lifted from the material.

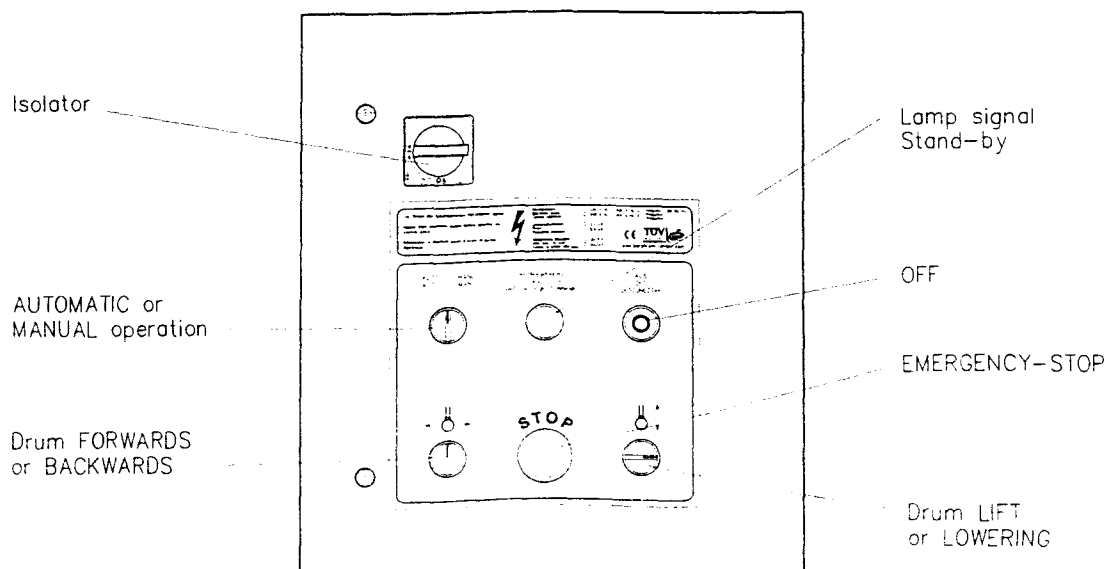
When starting on MANUAL, the JUMBO-ROLL-PACKER runs continuously until it is switched off by pressing the OFF button.

The compaction drum can be lowered by means of the LOWERING switch without rotating.

The compaction drum must start to move backwards and forwards immediately after switching on.



If there is merely a humming tone switch off immediately and change rotation of motor (swap round 2 of the 3 phases in the motor cable).



6. Electrical Circuit

If the drum does not complete its length of travel within a given time, it will automatically reverse direction (see point 6.3).

If the machine comes up against an object which has too great a resistance for the power of the motor, it again changes direction (see point 7.1).

The temperature in the control cabinet may not exceed $+60^{\circ}\text{C}$ or go below -10°C .

Where there are considerable minus temperatures a heating element must be installed in the control cabinet (contact manufacturer with requirements).

6.2 The motor overload protection

The motor protection switch (1) is an electronic component which switches off the machine automatically in case of motor overload.

The protection switch of your JUMBO-ROLL-PACKER is combined with the isolator (3) by a connection piece (2).

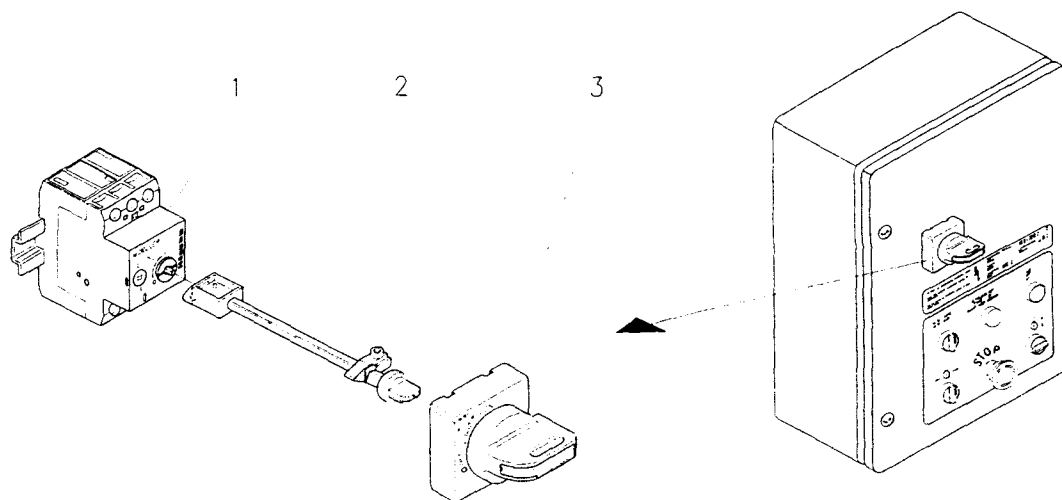
If the protection switch responds to an overload the isolator moves into OFF-position and switches the machine off. You can restart the JUMBO-ROLL-PACKER again by turning the isolator to ON.

The adjustment of the motor protection switch depends on the rated voltage of the machine and the efficiency of the electric motor.

The corresponding amperage is indicated on the type plate of the motor.



The motor protection switch is pre-set in the factory and the adjustment must not be changed.



6. Electrical Circuit

6.3 The electrical control

In the switch cabinet there is a system pcb and a special control which determines the working sequence of your machine.

If the JUMBO-ROLL-PACKER is started by means of the AUTO button switch the machine compacts until the running time has ended. You will find the time relay KT1 (1) for this running time at the system pcb. This relay covers a time from 1 minute to 10 hours. The factory setting is 30 min. and can be changed as required.

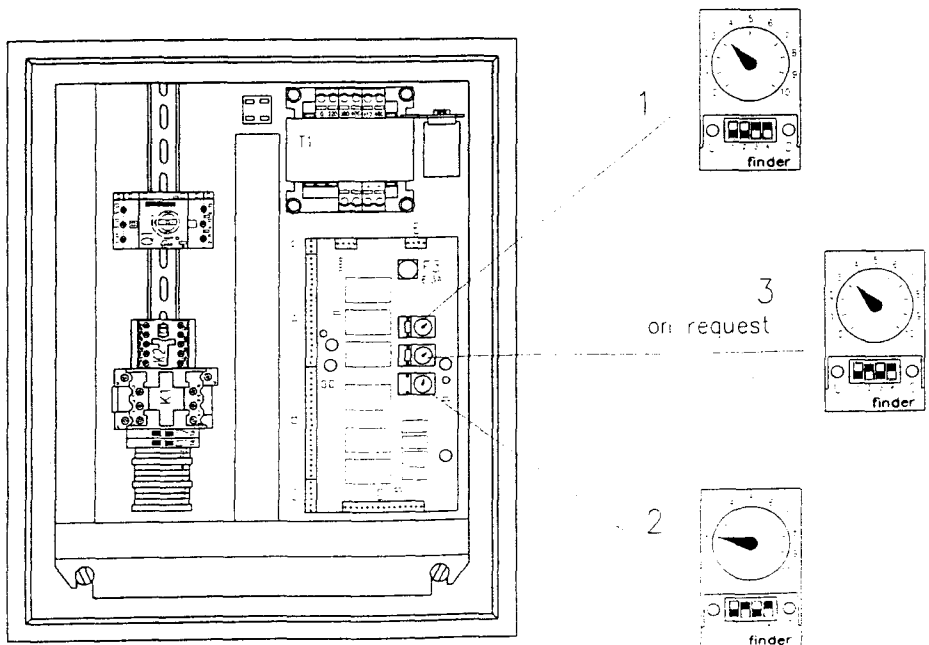
The time relay KT2 (2) effects the switch over of the compaction drum at the end of the container. Should the drum have reached the limit stop before the preset time has elapsed the limit switches will take over this task (see point 5.1).

The switch over time is preset to 22 seconds and you should not change it.

Furthermore the machine can be equipped with a time relay for the complete raising of the compaction drum upon request (see point 6.9.1).

Time adjustments :

(1) Running time KT1	time can be selected	1 min. - 10 h.
(2) Reversal time KT2	fixed adjustment	22 sec.
(3) Automatic lifting drum	fixed adjustment	30 sec.



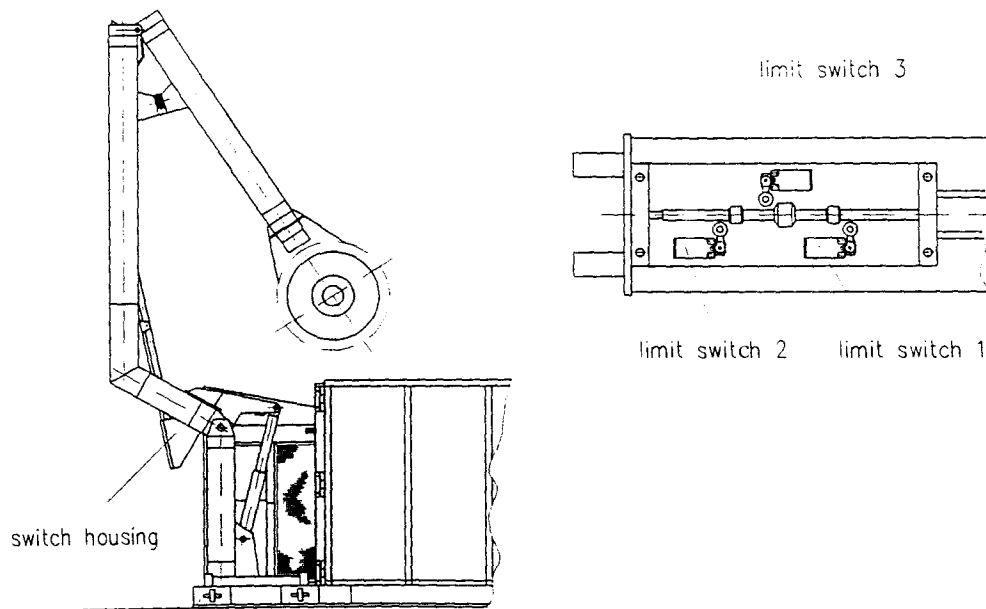
6. Electrical Circuit

6.4 The limit switches

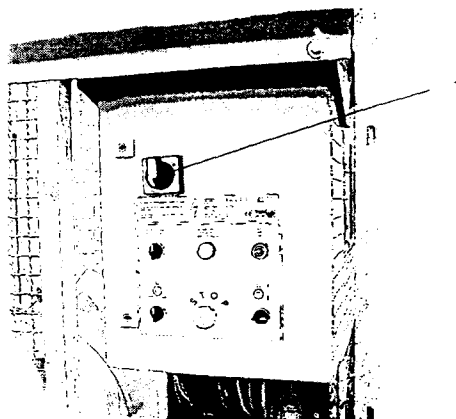
Located on the cranked arm is a housing containing 3 limit switches.

The two outer limit switches (1 & 2) limit the travel length of the drum in the container.

The middle limit switch (3) allows an exact vertical setting of the pendulum arm and the drum :
When the operation time has lapsed, the compaction drum moves until this limit switch is activated.
The pendulum arm is then in the vertical position and can be lifted out.



6.5 The isolator



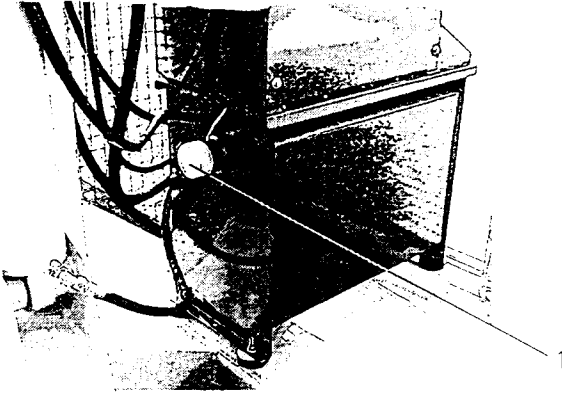
The JUMBO-ROLL-PACKER can be switched off at all poles (without N and PE) by the isolator. This is located to the control cabinet.

The door of the control cabinet can only be opened when the isolator is in the OFF position.

The isolator can be secured with a padlock to prevent unauthorised use of the machine.

6. Electrical Circuit

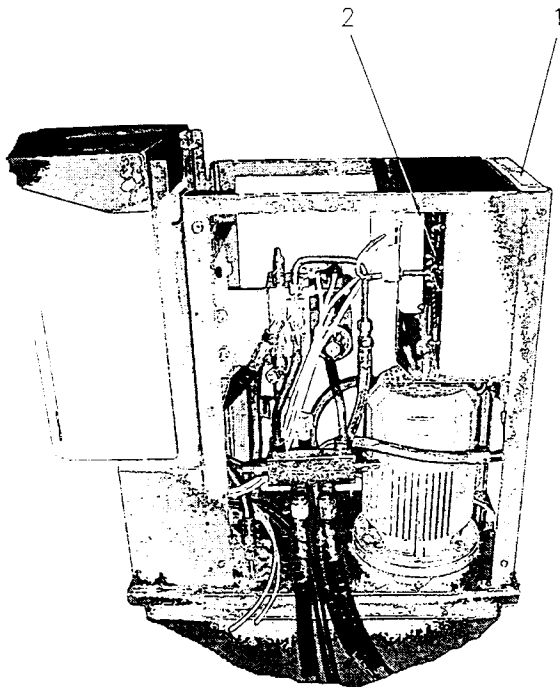
6.6 The float switch



The float switch is an electrical oil level control which switches the JUMBO-ROLL-PACKER off automatically when there is even a slight loss of oil.

It is located in the rear wall of the hydraulic tank.

6.7 The hydraulic oil cooler



To prevent overheating of the hydraulic system machines are fitted with an oil cooler (1) as standard.

If the electric motor is started, a ventilator (2) will automatically switch on.

i Oil cooler ribs are to be cleaned with a soft brush once a month.

6. Electrical Circuit

6.8 The safety switching

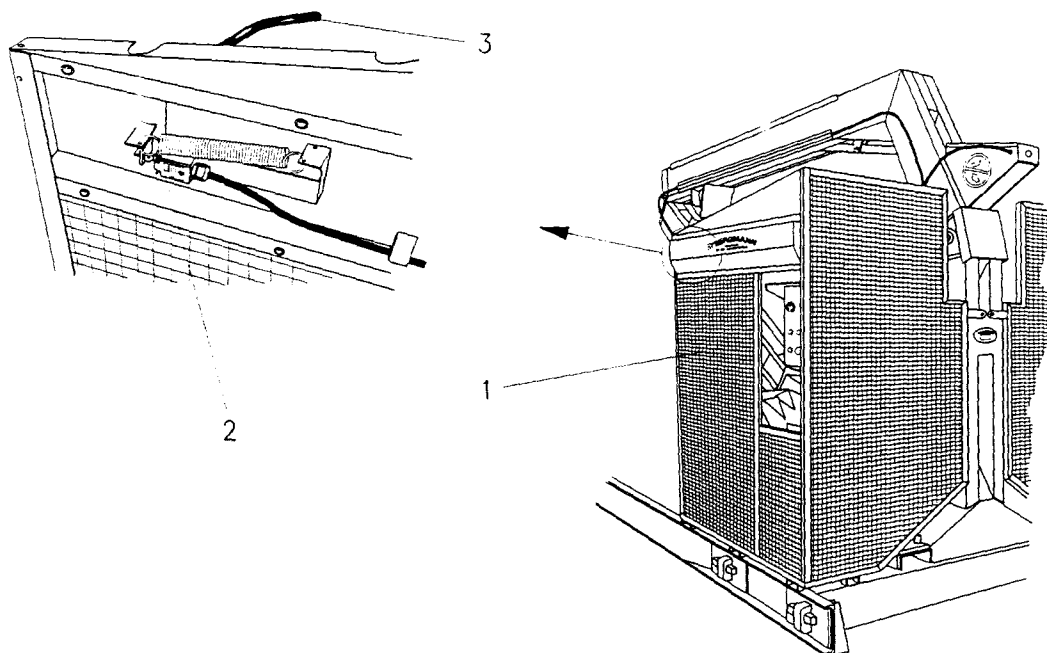
For safety reasons the JUMBO-ROLL-PACKER is only operational when a container is positioned right up against the stop plate.

The left and right hand guards (1) are fitted with a safety limit switch (2).

These are activated and the machine is ready for operation when the container strikes both arms (3).



Safety limit switch settings must not be altered.



6.9 Accessories

6.9.1 Automatic lifting

The JUMBO-ROLL-PACKER can be equipped with automatic lifting.

This only operates when the machine is started on AUTO and the operation time has lapsed. With the pendulum arm in the vertical the drum stops rotating and is automatically lifted out.

By pressing the OFF button the drum remains in the position where it was switched off.

6. Electrical Circuit

6.9.2 The hydraulic oil heater

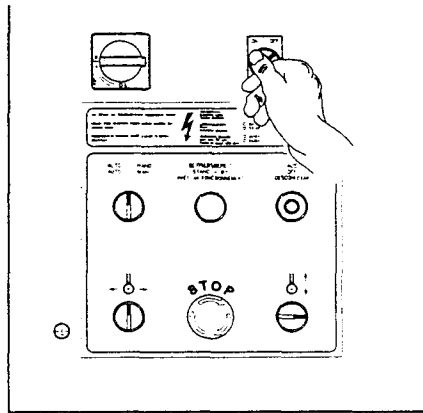
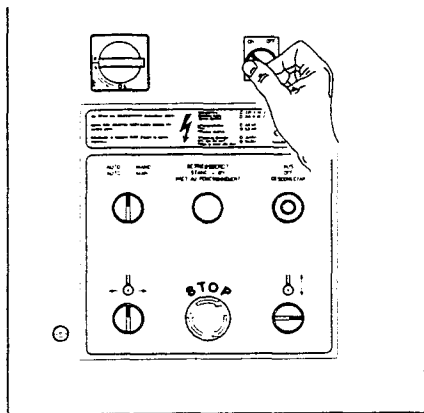
It is recommended that an oil heater be fitted when the JUMBO-ROLL-PACKER is used in temperatures under -10°C. The heater is fitted to the base of the hydraulic tank. This is put into operation by turning the ON switch.

It can only be switched off when :

- a) the machine is disconnected from the mains, or
- b) the switch is turned to OFF.



The temperature is fixed at 25°C and may not be altered.



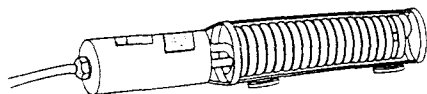
The oil tank heating can be installed at a later time without any problems. You will receive the assembly upon inquiry. You will find how to connect the heating in the chapter "Electrical control circuit" on page 6.09.



Please note that the heating may be installed by a qualified electrician only.

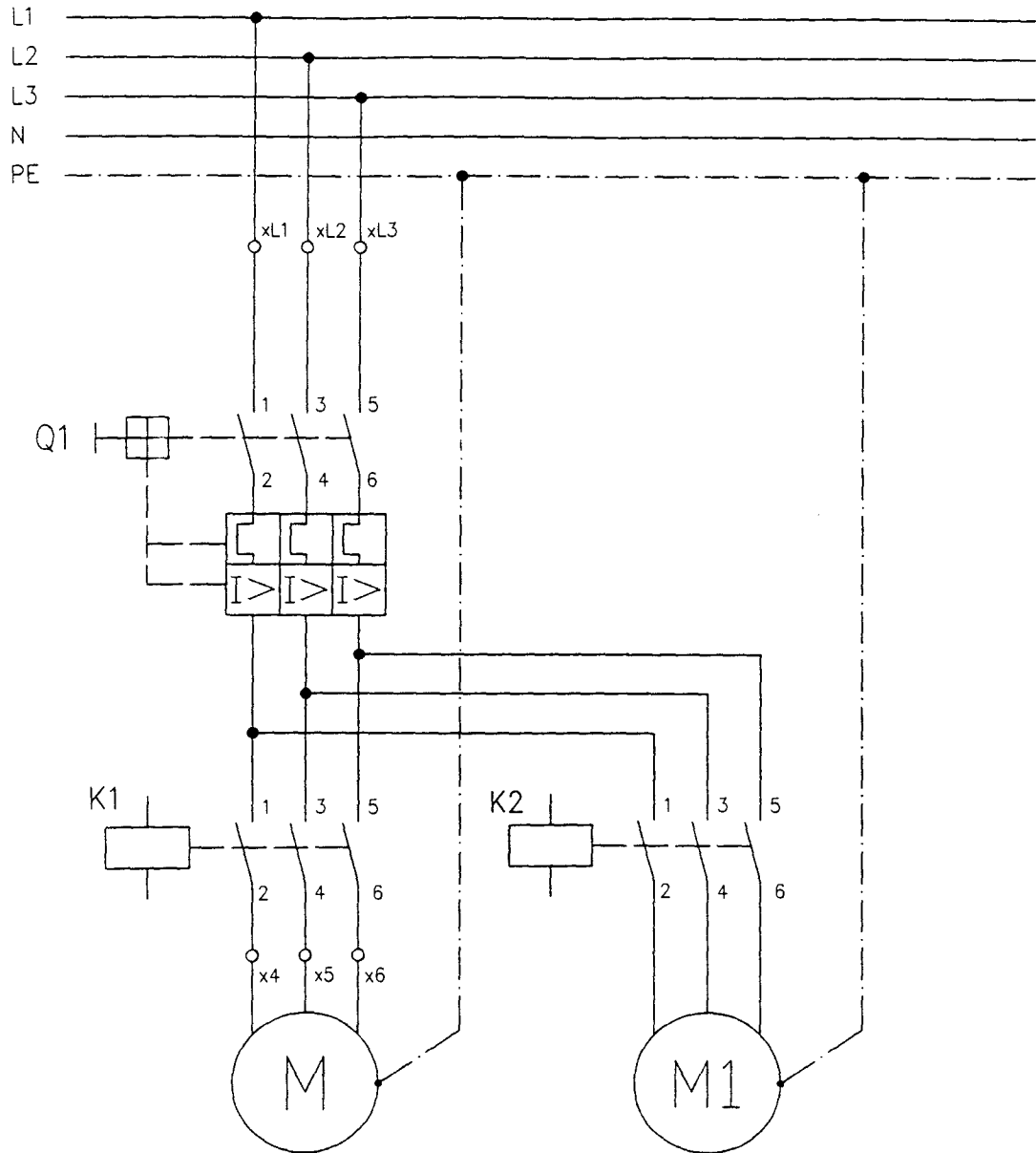
Should any problems arise during installation please contact the manufacturer or our service points.

hydraulic oil heater



6. Electrical Circuit

6.10 The main electrical circuit



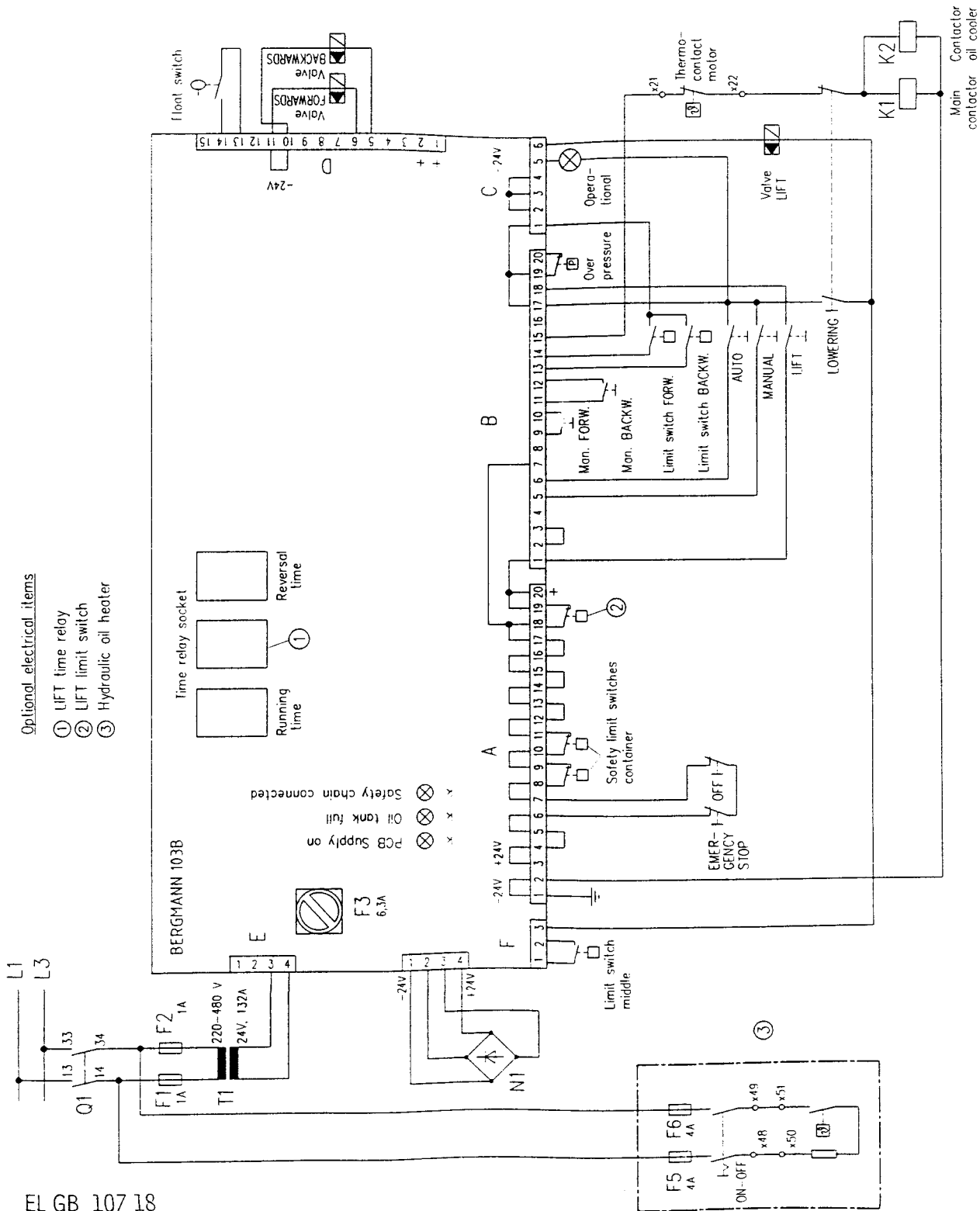
Supply via CEE connector 32A

- Q1 Motor overload protection / Isolator
- K1 Main contactor
- K2 Contactor oil cooler
- M Motor
- M1 Motor oil cooler

EL GB 107 01

6. Electrical Circuit

6.11 The electrical control circuit



EL GB 107 18

7. The Hydraulic Power Pack

7.1 General

The heart of the BERGMANN JUMBO-ROLL-PACKER is the hydraulic power pack.

The oil filter and the motor with the oil pump are in the hydraulic tank.

The gear pump, which is environmentally - friendly and quiet in operation, transfers oil from the tank into the hydraulic system.

An oil cooler prevents overheating of the system. If the electric motor is started, a ventilator will automatically switch on.

A hydraulic valve directs the oil so that the drum continuously runs backwards and forwards. After switching on, the compaction drum firstly moves away from the column.

On reaching the front or the back end of the container, a limit switch reverses the hydraulic valve and thus the direction of the drum.

If the drum comes up against too great an obstacle it will reverse due to a built-in oil pressure switch.

An adequate pressure in the system is absolutely essential for the proper function of your unit. Should there result any problems during lifting or switching of the compaction drum this can be traceable to the fact that the oil pressure has not been adjusted correctly. Please contact the manufacturer or one of our service points.

The hydraulic system is filled with 100 litres of hydraulic oil. The oil level must always be visible in the sight-glass (see pt 3 at page 7.02). An electrical oil controller (float switch, pt. 1) switches the machine off even when there is only a slight loss of oil.

An oil change should always be made once annually for single shift operation (= 8 hours per day); when operation is for more than one shift this should be carried out more frequently.

The ambient temperature must not exceed +60°C or fall below -15°C.

For machines located in the open and when extremely low temperatures are experienced, a suitable grade of oil must be used or a heating element fitted to warm the oil to its operating temperature.

Please contact the dealer or the manufacturer.

7.2 The grade of hydraulic oil

The correct use of the appropriate lubricants contributes considerably to achieving maximum efficiency and avoiding troubles in everyday use.

Therefore we would recommend using the hydraulic oil

HLP according to DIN 51 524, part 2 with a viscosity of 46 mm²/s at 40°C.

For the initial filling of the hydraulic tank Violan HLP 46 was used

However, you can also use products of equally good quality. Examples are shown in the lubrication chart in chapter 13.

7. The Hydraulic Power Pack

7.3 Oil change on the hydraulic power pack



Only personnel with special know-how and experience of hydraulics may work on the hydraulic system.

The cylinder should be lowered before the oil change is carried out.

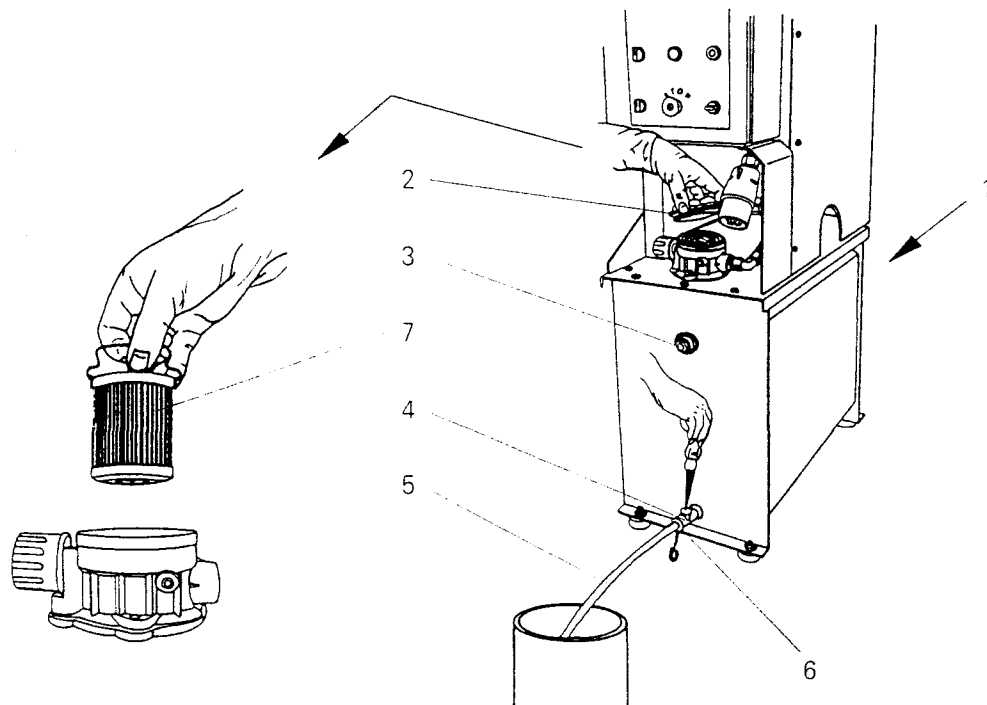
Ensure that oil changes are carried out in a dust-free environment. Cleanliness is vital.

Oil should only be drained at operating temperature.

- 1) Disconnect the JUMBO-ROLL-PACKER from the electricity supply. Screw the hose connector (6) to the ball valve (+). This is factory supplied and placed in the control cabinet. If necessary fit a length of 1/2" hose (5) to the connector.
- 2) Unscrew the filter cap (2) and remove the filter element (7).
- 3) Using a screwdriver open the ball valve and drain the oil into a suitable container. When tank is empty close the ball valve and remove the hose and connector.
- 4) Fill with 100 litres of hydraulic oil and check the oil level in the sight glass (3). This must be filled to the halfway mark. Finally, insert a new filter element (7) and tightly screw down the filter cap (2).

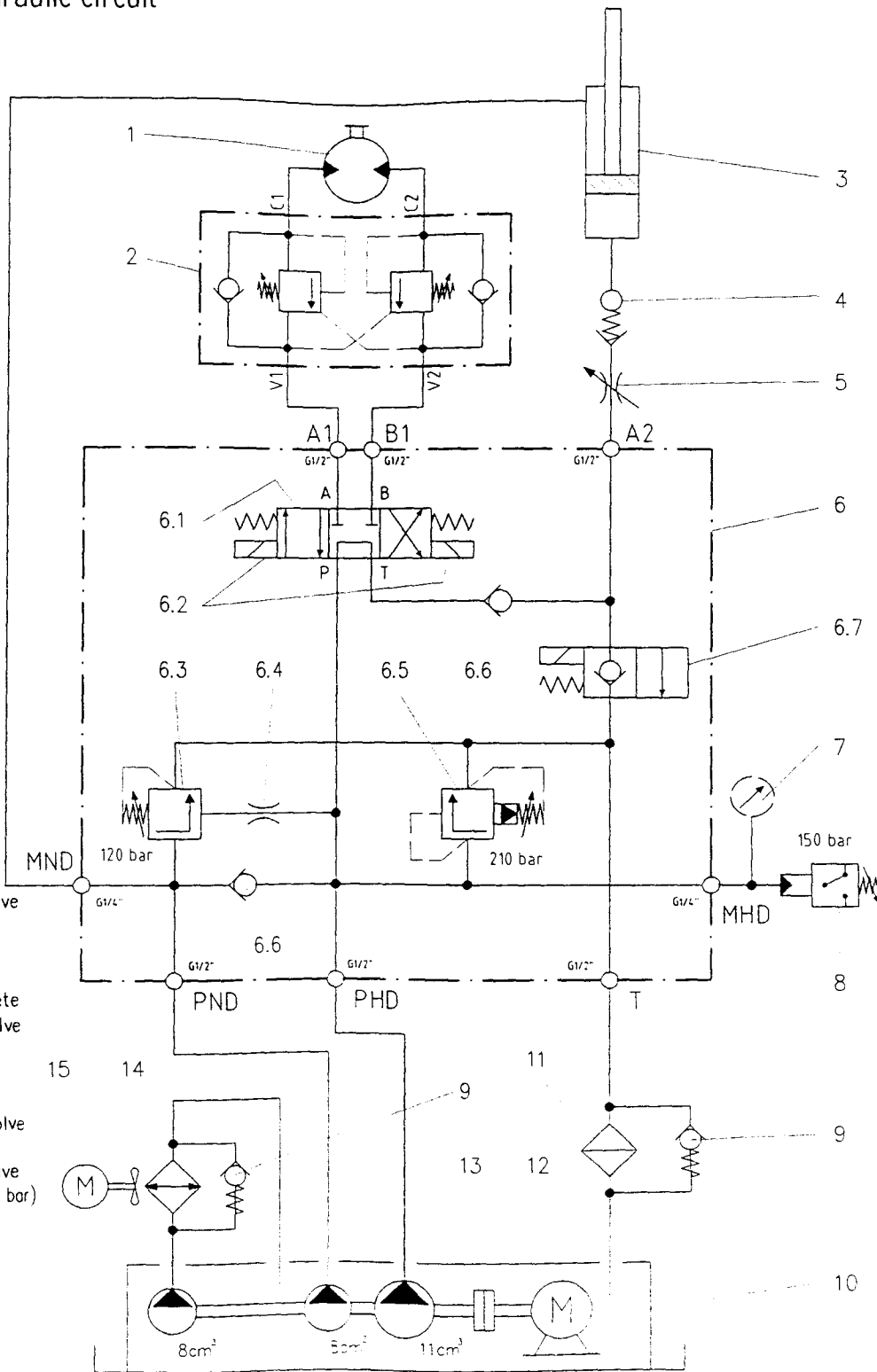


Used oil must be disposed of in accordance with local bye-laws.



7. The Hydraulic Power Pack

7.4 The hydraulic circuit



- 1 hydraulic motor
- 2 parallel-braking valve
- 3 hydraulic cylinder
- 4 check valve
- 5 restrictor
- 6 valve block, complete
- 6.1 4/3 distributing valve
- 6.2 magnet
- 6.3 shut-off valve
- 6.4 restrictor
- 6.5 pressure limiting valve
- 6.6 non-return valve
- 6.7 2/2 distributing valve
- 7 manometer (0 - 400 bar)
- 8 oil pressure switch
- 9 non-return valve
- 10 hydraulic tank
- 11 return oil filter
- 12 electric motor
- 13 hydraulic pump
- 14 oil cooler
- 15 ventilator

HY GB 105 08

8. The Gearbox

8.1 General

Inside the compaction drum is a hydraulic motor and a spurwheel gearbox. These produce a continuous movement of the compaction drum.

The spurwheel gearbox contains 6.0 litres gear lubricant oil.

The gear lubricant oil should be changed initially after 100 - 200 hours of operation. Subsequently once every 1 - 2 years.

The ambient temperature must not exceed + 60°C or fall below - 10°C. For other temperature conditions please contact the manufacturer.

8.2 Grade of gear lubricant oil

The correct use of the appropriate lubricants contributes considerably to achieving maximum efficiency and avoiding troubles in everyday use.

Therefore we would recommend using the gearbox oil

CLP according to DIN 51 517, part 3 with a viscosity of 320 mm²/s at 40°C.

For the initial filling of the gearbox Mobilgear 632 was used.

However, you can also use products of equally good quality. Examples are shown in the lubrication chart in chapter 13.

8. The Gearbox

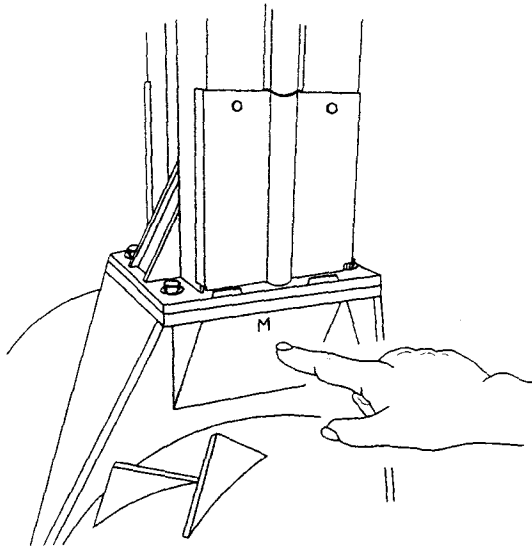
8.3 Oil change in the gears



For the oil change lifting devices such as forklift trucks or elevating trucks are required in order to remove the drum half. These auxiliaries must be provided by the operator.

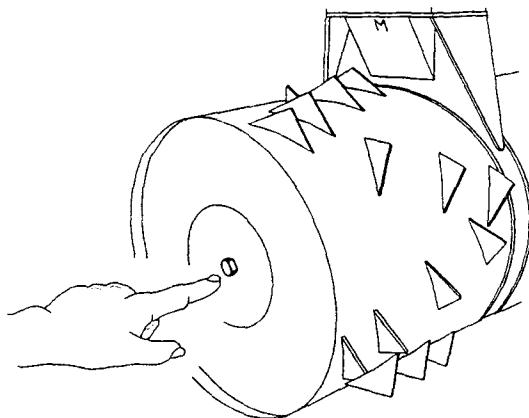
Ensure that oil changes are carried out in a dust-free environment. Cleanliness is vital.

Oil should only be drained at operating temperature.



- 1) In order to change the gear lubricant oil, firstly remove the drum-half marked "M".

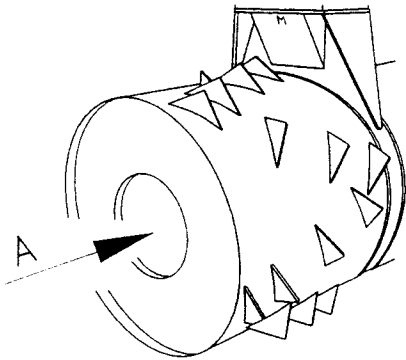
The "M" is stamped on the gearbox mounting.



- 2) Unscrew the hubcap on the outside of the drum and remove the hubcap mounting.

8. The Gearbox

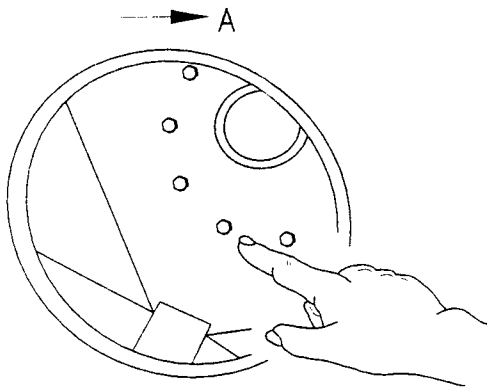
32



- 3) Fasten the drum half to be removed safely to a lifting device (e.g. forklift truck or crane).

Loosen the 10 screws which connect the gearbox with the drum.

Then remove the drum.



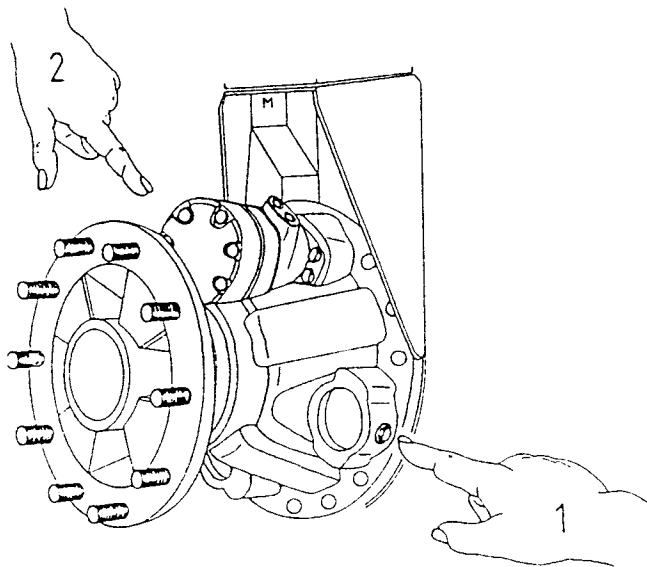
- 4) Two screws can be found opposite each other on the gearbox.
Open the lower screw (1) and drain the oil into a suitable container.
Loosen the upper screw (2) as well so that all the oil can be drained.

- 5) Then tighten the lower screw again.

- 6) Fill with 6.0 litres gear lubricant oil.

- 7) Tighten the upper screw.

- 8) Reassemble the compaction drum in the opposite order and replace the hubcap.

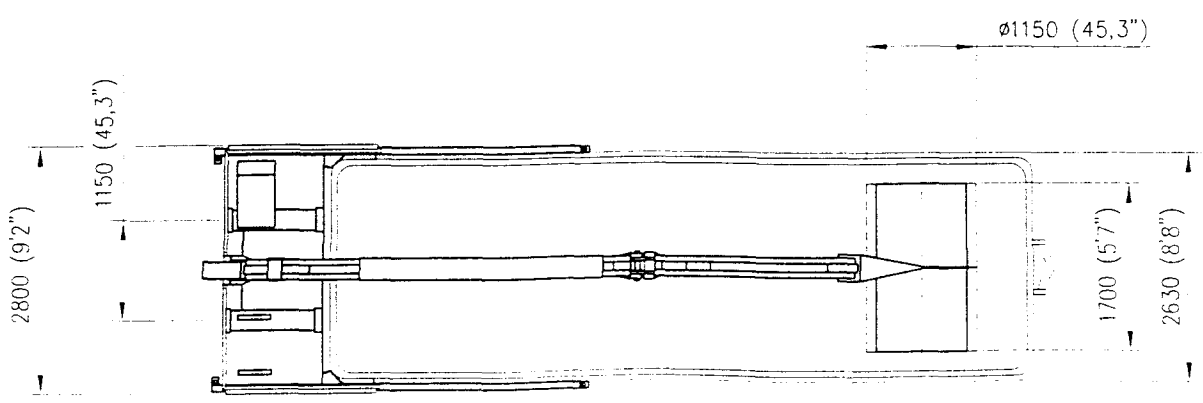
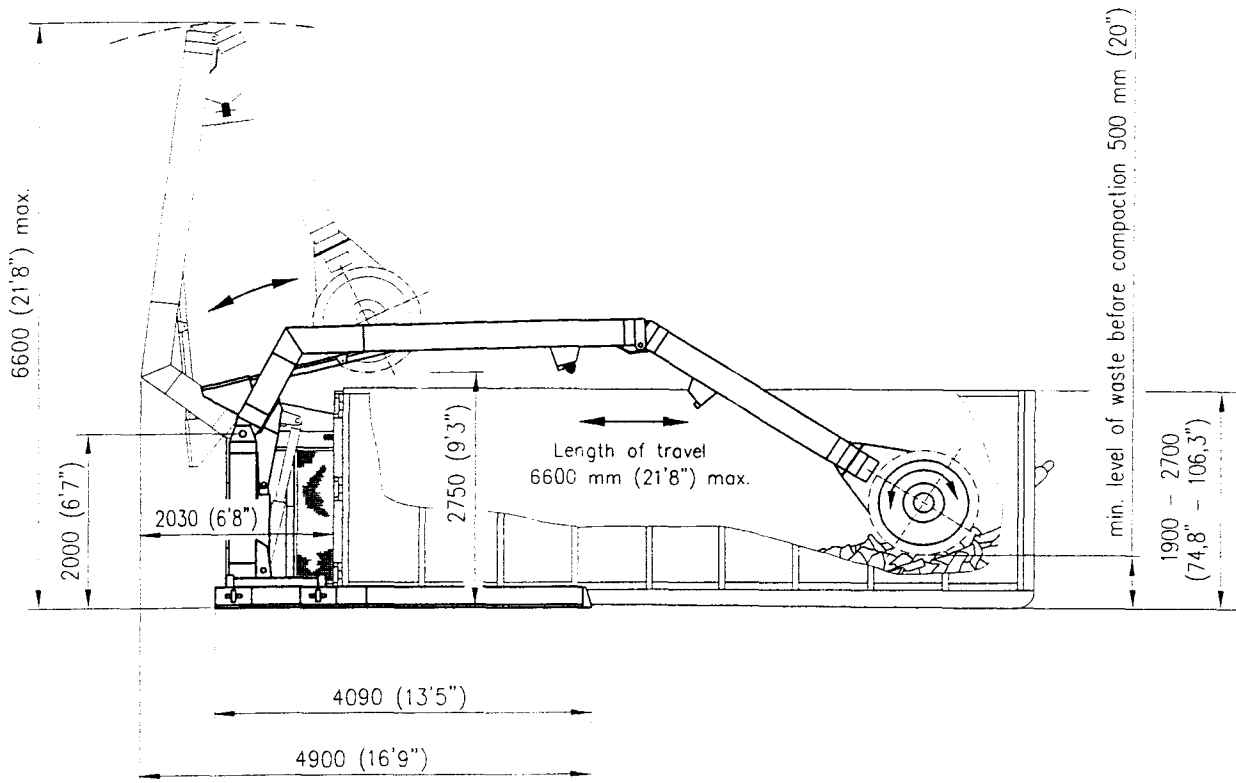


i Used oil must be disposed of in accordance with local byelaws.

9. Technical Data

Power	5,5 kW (7,38 HP)
Speed electric motor	1500 min ⁻¹
Power supply	Rubber sheathed cable to specification H07 RN-F CEE - plug 5 x 32 A (clockwise rotation)
Input voltage	220 - 240 / 380 - 415 V (depending on local supply - see label on the machine)
Frequency	50 Hz
Control voltage	24 V
Main fuse (by user)	3 x 25 A
Degree of protection	IP 54 as per DIN 40 050
Drum speed	6 rpm
Noise level	72 dB (A) as per DIN 5045, 1m next to the hydraulik power pack
Displacement hydraulic- pump	11/8/8 cm ³ /rev. (0,671/0,488/0,488 cu.in./rev.)
Operating pressure	up to 210 bar (2,987 psi)
Amount of hydraulic oil	100 litres (22 galUK) (26,42 galUS)
Hydraulic oil	HLP as per DIN 51 524, part 2 viscosity of 46 mm ² /s at 40°C temperature range : - 15°C to +60°C
Amount of gear lubrication oil	6,0 litres (1,3 galUK) (1,6 galUS)
Gear lubrication oil	CLP as per DIN 51 517, part 3 viscosity of 320 mm ² /s at 40°C temperature range : - 10°C to +60°C
Container height min.	1900 mm (74,8")
max.	2790 mm (109,8")
Machine width	2790 mm (109,8")
Machine height, max.	6600 mm (213")
Machine length	4900 mm (160")
Drum diameter	1150 mm (45,3")
Drum weight	1200 kg (2,646 lbs)
Weight	3200 kg (7,055 lbs)

10. Dimensions



11. Maintenance and Care

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11.1 General

The use of appropriate grade materials ensure that the machine will give many years of service.

Nevertheless maintenance and repairs are necessary and these works have to be carried out on time and with the necessary care.

This applies especially for maintenance after the first hours of operation because otherwise possible guarantees will not be valid.

You will find a list of the necessary jobs in the following.



All maintenance and repair works may only be carried out by qualified personnel with corresponding know how.

It is absolutely necessary to consider the safety instructions in Chapter 3.

If no appropriate personnel is at your disposal our company or one of our service partners will be glad to help you.

In order to preserve the efficiency and reliability in service of your BERGMANN - machine we would recommend annual maintenance by our company or by one of our service partners.

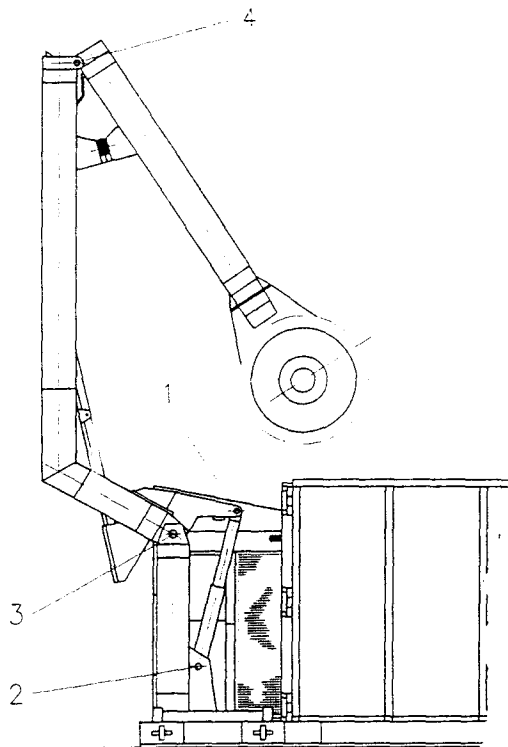
11. Maintenance and Care

11.2 Maintenance and inspection list

Interval	Description of work	Procedure	see chapter / note
after the first 20 operating hours	retighten all connections and screwed connections retighten all screwed connections		see ch. 11.4
after the first 100 to 200 operating hours	gear oil change check oil filter for pollution	remove filter cover. clean if required	see ch. 8 see ch. 7
every 2 weeks	lubrication of bearing points	with 1-2 portions of grease	see ch. 11.3
monthly	check electrical lines for chafe marks check hydraulic hoses for chafe marks check hydraulic screwed connections for leakages check oil level clean oil cooler lamellas check screwed connections	visual check, replace lines as required visual check, replace hoses as required visual check, retighten screwed connections and/or replace oil sight glass at tank must be filled up to the half by means of a soft brush retighten connections as required	see ch. 7 see ch. 6.7 see ch. 11.4
quarterly	clean electric motor	remove motor protection, clean fan blades, cooling vanes, motor protection	see ch. 11.5
yearly *	oil change in hydraulic unit		see ch. 7
every 1-2 years	gear oil change		see ch. 8
every 6 years	replace pressure hoses		enter replacement into maintenance plan

* in one-shift operation 8 hours per day, yearly, in case of several shift operation

11.3 Lubrication of the bearings



A proper lubrication of your machine is absolutely necessary to ensure a trouble-free operation and to avoid expensive repairs.

The JUMBO-ROLL-PACKER has lubrication points at the cylinder bushes (1 and 2) as well as at the joints between the support frame and the cranked arm (3) and the cranked arm and the pendulum arm (4).

Lubrication should be carried out every 14 days; using a grease gun apply a generous quantity of resin-free grease.

We would recommend the use of lithium base or natrium base grease KP 0 F -30 or GP 0 F -30.

One can, however, also use greases of an equally good quality with the following characteristics:

Temperature range for use		- 30 to + 80°C
Walkpenetration	DIN ISO 2137	355 to 385 (NLGI - class 0)
Drop point	DIN ISO 2176	approx. 150°C
Corrosion protection	DIN 51 802	corrosion degree 0
Basic oil viscosity at 40°C	DIN 51 562	approx. 130 mm ² /s

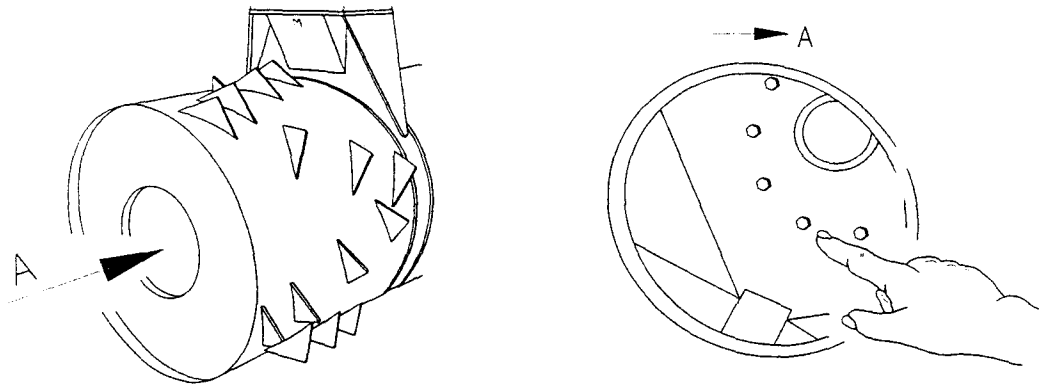
11. Maintenance and Care

11.4 Check of screwed connections

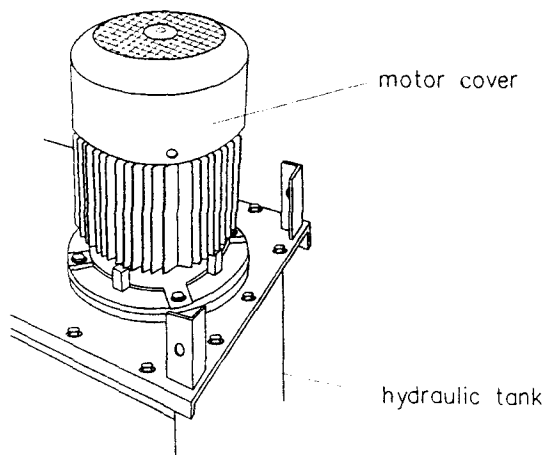
All screwed connections first must be checked and retightened if required after the first 20 operating hours and then at monthly intervals.

In order to reach the screwed connection between drum and gear holding device you first have to remove the sealing sheet.

Instead of a monthly check it is sufficient to check the screwed connections when the hydraulic oil is changed, i.e. yearly.



11.5 Cleaning of electric motor



The motor should be cleaned quarterly to prevent it from burning out.

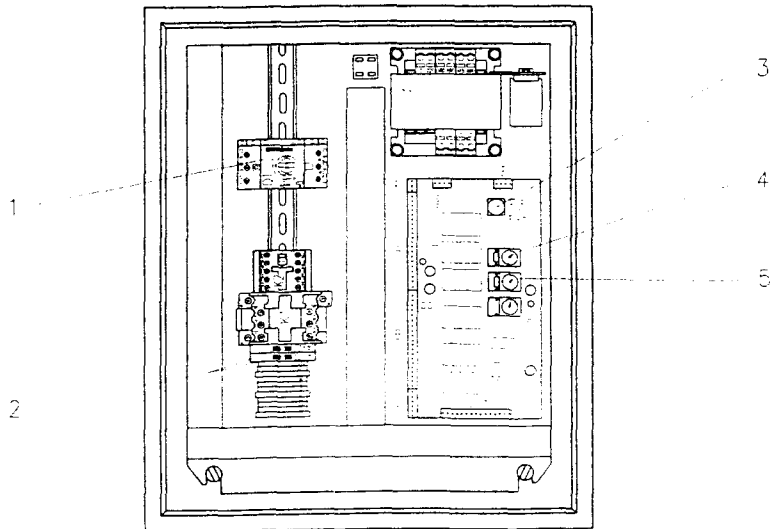
Lift off the motor cover and clean the fan as well as the cover and the motor cooling fins.



All maintenance and repair works may only be carried out by qualified personnel with corresponding know how.
It is absolutely necessary to consider the safety instructions in Chapter 3.

<u>Problem</u>	<u>Source</u>	<u>Solution</u>
1. The machine cannot be switched on	1.1 No power available	Check supply voltage
	1.2 Plug faulty	Change plug
	1.3 Isolator not switched on	Switch on isolator (at the control cabinet)
	1.4 Motor overload protection has tripped	Re-set motor overload (see fig.1, pt.1)
	1.5 Defect fuse	Change fuse (see fig.1, pt.2 or 3)
	1.6 STOP - impact switch locked	Release STOP - impact switch
	1.7 Switch contacts stuck	Check all contacts in control panel
	1.8 Motor defective	Replace motor
	1.9 Float switch registering too little oil	Top up with hydraulic oil or carry out oil change (see chapter 7)
	1.10 Safety limit switch has not been activated	Push container hard up against the stop plate

fig. 1



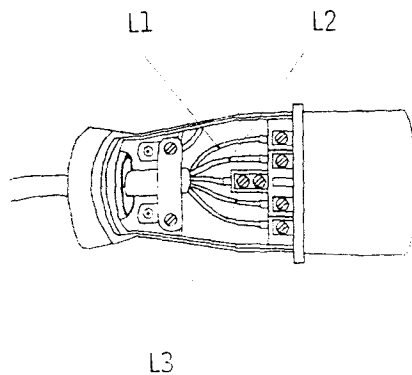
12. Trouble - Shooting

<u>Problem</u>	<u>Source</u>	<u>Solution</u>
2. Green lamp on control panel does not light up	2.1 Lamp defect	Replace lamp
3. Drum will not lift high enough	3.1 Not enough pressure	Set oil pressure to 210 bar; please contact dealer
	3.2 Time relay for automatic lifting defect or set wrong	Re-set or replace time relay (see fig. 1, pt. 5)
4. Machine does not automatically switch off	4.1 Time relay for running time defective	Replace time relay (see fig. 1, pt. 4)
5. Oil is leaking out	5.1 Hydraulic hoses or screw connections leaking	Tighten connections; Replace hoses
6. Drum comes up against obstacle, builds up pressure but does not reverse after approx. 3 seconds.	6.1 Oil pressure switch set too high	Set oil pressure to 150 bar; please contact dealer
	6.2 Oil pressure switch defect	Replace oil pressure switch
7. Drum reverses even against slight resistance	7.1 Oil pressure switch set too low	Set oil pressure to 150 bar; please contact dealer
8. Drum runs in only one direction	8.1 Plug on magnet coil defective	Replace plug
	8.2 Magnet coil on valve is defective	Replace magnet coil
9. Drum does not move when the machine is switched on	9.1 Hydromotor defective	Replace hydromotor

12. Trouble - Shooting

<u>Problem</u>	<u>Source</u>	<u>Solution</u>
10. Motor running, drum stands still	10.1 Pump defect	Replace pump
	10.2 No pressure	Set oil pressure to 150 bar; please contact dealer
	10.3 Supply incorrectly connected	Swap 2 of the 3 supply phases (see fig. 2)
11. Drum does not lift	11.1 Not enough pressure	Set oil pressure to 210 bar; please contact dealer
	11.2 Outside temperature too low	Allow machine to run warm by turning on AUTO or MANUAL switch
12. Drum does not lower again	12.1 Plug on magnet coil defect	Replace plug
	12.2 Magnet coil on valve defect	Replace coil
13. Drum drive against container end wall	13.1 Incorrect travel setting	Check setting of adjustment bushes (see point 5.1)
	13.2 Limit switch defect	Check limit switch, replace if necessary

fig. 2













13. Lubrication chart

We draw our customer's attention to the importance of using the correct lubricants in our machines. The proper application of appropriate lubricants will enhance performance and avoid breakdowns.

We therefore recommend the use of

- Hydraulic oil HLP to DIN 51 524, part 2 and
- Gearbox oil CLP to DIN 51 517, part 3.

Machines are delivered with Wiolan HLP 46 in the hydraulic tank and Mobilgear 632 in the gearbox. The following chart shows which equivalents can be used when an oil change becomes due.

	Hydraulic oil with a Viscosity of 46 mm ² /s at 40°C	Gearbox oil with a Viscosity of 320 mm ² /s at 40°C
	Aral Vitam GF 46	Aral Degol BMB 320, Aral Degol BG 320
	BP Energol HLP 46	BP Energol GR-XP 320
	Chevron EP Hydraulic Oil 46	Chevron Non-Leaded Gear Compound 320
	NUTO H 46	SPARTAN EP 320
	Mobil D.T.E. 27	Mobilgear 632
	Shell Tellus Oil 46 Shell Tell Artic ISO VG 46 (bis -40°C)	Shell Omala Oel 320
	Rando Oil HD A-46	Meropa 320
	Astron HLP 46	Falcon CLP 320
	Wiolan HLP 46	Ersolan 320
	Renolin B 15	

14. Guarantee and liability

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14.1 Obligation of the user

The user undertakes to allow only such persons to work on the machine who

- are familiar with the basic regulations of safety on the job and accident prevention and who have been instructed in the use of the machine.
- have read and understood the operating instructions, especially the safety instructions and warnings and who have signed this by their signature.

14.2 Guarantee and liability

As a rule our "General Standard Terms and Conditions" are valid. The user is in possession of these since the conclusion of the contract.

Guarantee and liability claims in case of personnel or property damages are excluded if they are traceable to one or several of the following causes:

- improper use of the machine
- improper installation, commissioning, operation and maintenance of the machine
- operation of the machine with defect safety devices or improperly mounted or non-functioning safety and protective devices
- non-observance of the notes in the operating instructions with regard to transport, installation, commissioning, operation and maintenance of the machine
- unauthorised modifications of the machine without the written consent of the manufacturer
- insufficient inspection of machine parts which are subject to wear
- repairs which have been carried out improperly
- catastrophes caused by foreign bodies or acts of God.

14.3 Copyright

BERGMANN maintain the copyright for these operating instructions.

The instructions are only intended for the user and his staff.

It contains regulations and notes, which may neither completely nor partially be

- copied
- distributed or
- transferred to any third party

Violations can entail criminal prosecution

15. CE - Declaration of conformity

CE - Declaration of Conformity

in accordance with EU Machinery Directive 89 / 392 / EEC, Section II A

We hereby declare that the machine indicated below conforms, on the basis of its design and construction as well as the production methods employed by us, to the relevant and fundamental Health and Safety requirements of the EU - Directive.
This declaration loses its validity in the event of changes to the machine without our permission.

Machine description	JUMBO - ROLL - PACKER
Machine type	RP 7700

Relevant EU - Directive

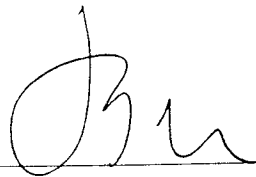
- EU - Machinery Directive (89 / 392 / EEC)
- EU - Low Voltage Directive (73 / 23 / EEC)
- EU - Electromagnetic Compatibility Directive (89 / 336 / EEC)

Applicable harmonised standards, in particular

- EN 292 Parts 1 & 2
- EN 294, EN 349, EN 418 and EN 60204

Applicable national standard and technical specifications, in particular

GUV 17.5



Heinz Bergmann
(Owner)