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Vibratory Plate

DPU 100-70

Operator's Manual

Operating instructions

1. Foreword

For your own safety and protection from bodily injuries, carefully read, understand and follow the safety instructions in this manual.

Please operate and maintain your Wacker machine in accordance with the instructions in this manual. Your Wacker machine will reward your attention by giving trouble-free operation and a high degree of availability.

Replace defective machine components immediately.

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Safety instructions

2. Safety instructions

safety instructions for the use of vibratory plates with combustion engines

2.1 General instructions

- 2.1.1 Vibratory plates may only be operated by persons who
- * are at least 18 years of age
 - * are physically and mentally fit for this job
 - * have been instructed in guiding vibratory plates and proved their ability for the job to the employer
 - * may be expected to carry out the job they are charged with carefully.
- The persons must be assigned the job of guiding vibratory plates by the employer.
- 2.1.2 Vibratory plates may only be used for compaction jobs. Both the manufacturer's operating instructions and these safety instructions have to be observed.
- 2.1.3 The persons charged with the operation of vibratory plates have to be made familiar with the necessary safety measures relating to the machine. In case of extraordinary uses the employer shall give the necessary additional instructions.
- 2.1.4 It is possible that these vibratory plates exceed the admissible assessment sound level of 89 dB (A). Employees must wear personal ear protection if the sound level reaches 89 dB (A) or more.

2.2 Operation

- 2.2.1 The function of operation levers or elements is not to be influenced or rendered ineffective.
- 2.2.2 During operation the operator may not leave the control elements.
- 2.2.3 The operator has to stop the engine of the vibratory plate before going on breaks. The machine has to be placed such that it cannot turn over.
- 2.2.4 Stop engine before filling fuel tank. When refilling fuel tank, do not allow fuel to come into contact with the hot part of the engine or spill onto the ground.
- 2.2.5 Do not smoke or handle open fire near this machine.

Safety instructions

- 2.2.6 The tank lid must fit tightly. Shut fuel cock if available when stopping the engine. For long distance transports of machines operated by fuel or fuel - mixtures, the fuel tank has to be drained completely.



Leaky fuel tanks may cause explosions and must therefore be replaced immediately.

- 2.2.7 Do not operate this machine in areas where explosions may occur.
- 2.2.8 Make sure that sufficient fresh air is available when operating vibratory plates equipped with combustion engines in enclosed areas, tunnels, galleries and deep trenches.
- 2.2.9 During operation keep your hands, feet and clothes away from the moving parts of the vibraton plate. Wear safety shoes, and eye protection glasses in case of trench operation where falling sand stones maybe ejected.
- 2.2.10 When working near the edges of breaks, pits, slopes, trenches and platforms, vibratory plates are to be operated such that there is no danger of their turning over or dropping in.
- 2.2.11 Make sure the soil or subsoil to be compacted has a high enough load carrying capacity.
- 2.2.12 Use appropriate protective clothing while working or while carrying out maintenance work.
- 2.2.13 When traveling backwards the operator has to guide the vibration plate laterally by its guide handle so that he will not be squeezed between the handle and a possible obstacle. Special care is required when working on uneven ground or when compacting coarse material. Make sure of a firm stand when operating the machine under such conditons.
- 2.2.14 Vibratory plates are to be guided such that hand injuries caused by solid objects are avoided.
- 2.2.15 Vibratory plates have to be guided such that their stability is guaranteed.

Safety instructions

2.3 Safety checks

- 2.3.1 Vibratory plates may only be operated with all safety devices installed.
- 2.3.2 Before starting operation, the operator has to check that all control and safety devices function properly.
- 2.3.3 Only use original spare parts. Modifications to this machine including the adjustment of the maximum engine speed set by the manufacturer are subject to the express approval of WACKER. In case of nonobservance all liabilities shall be refused.
- 2.3.4 The machine must to be switched off immediately in case of defects jeopardizing the operational safety of the equipment.
- 2.3.5 Process materials and operating fuels must be stowed away in receptacles or containers marked according to the respective manufacturers specifications.

2.4 Maintenance

- 2.4.1 Only use original spare parts. Modifications to this machine including the adjustment of the maximum speed set by the manufacturer are subject to the express approval of WACKER. In case of nonobservance all liabilities shall be refused.
- 2.4.2 All drive units have to be switched off before carrying out maintenance jobs. Deviations from this are only allowed if the maintenance or jobs require a running engine.
- 2.4.3 When working on vibratory plates equipped with electric starter, disconnect battery before carrying out maintenance or repair jobs on the electric parts of the machine.
- 2.4.4 Remove pressure from hydraulic lines before working on them. Caution: take care when removing hydraulic lines, for the oil may be very hot (up. over 80° C). Precautions are to be taken to prevent oil from splashing into the operator's eyes.
- 2.4.5 All safety devices must be reinstalled properly immediately after maintenance and repair jobs have been completed.
- 2.4.6 Do not hose down the machine with water after each use to avoid possible malfunctions. Do not use high pressure washers nor chemical products.

2.5 Transport

- 2.5.1 During transport, loading and unloading of vibration plates by means of lifting devices, appropriate slinging means or hooks have to be used on the lifting points provided for this purpose on the vibratory plate.

- 2.5.2 The load-carrying capacity of the loading ramps has to be sufficient and the ramps have to be secure such that they cannot turn over. Make sure that no one be endangered by machines turning over by slipping or by moving machine parts.

- 2.5.3 When being transported on vehicles, precautions have to be taken that vibration plates do not slip or turn over.

2.6 Maintenance checks

- 2.6.1 According to the conditions and frequency of use, vibratory plates have to be checked for safe operation at least once a year by skilled technicians, such as those found at WACKER-service depots and have to be repaired if necessary.

Please also observe the corresponding rules and regulations valid in your country.

Technical Data

3. Technical Data

	DPU 100-70	
Item no.	0008900 0008991	
Operating weight		
without extension plates kg:	710	
with extension plates kg:	756	
Travel speed / reverse speed		
without extension plates m/min:	30	
with extension plates m/min:	28	
Compacted area		
without extension plates m ² /h:	1260	
with extension plates m ² /h:	1478	
Power transmission	From the drive engine via gear pump and gear motor onto exciter, from where the centrifugal forces generated transmit directly to the base plate	
Exciter		
Vibrations	min ⁻¹ (Hz):	3360 (56)
Centrifugal force	kN:	100
Oil	Fuchs Titan Unic 10W40 MC (SAE 10W40)	
Oil quantity	l:	1,5
Drive motor		
Air cooled twin cylinder diesel engine		
Piston displacement	cm ³ :	954
Engine speed	min ⁻¹	2874
Rated power (*)	kW:	14,9
Fuel	Diesel	
Fuel consumption	l/h:	2,6
Tank capacity	l:	7,5
Oil	Fuchs Titan Unic 10W40 MC (SAE 10W40)	
Oil quantity	l:	2,5

Technical Data

		DPU 100-70
Electrical system		
Battery		Special Wacker-battery for vibro plates, 12 V - 55 Ah
Alternator		Three-phase current generator
Charging voltage	V:	14
D.C.	V:	12
Hydraulic		
Hydraulic oil		Fuchs Renolin MR 520
Tank capacity	l:	40
Relief pressure (forwards/reverse) Motion direction control	bar:	50
Relief pressure Drive exciter	bar:	200
Special lubricating grease	L _{PA} :	95 dB(A)
Weighted effective acceleration value - according to EN ISO 5349	m/s ² :	4,9
(*) In accordance with the installed useful outlet power according to Directive 2000/14/EG.		

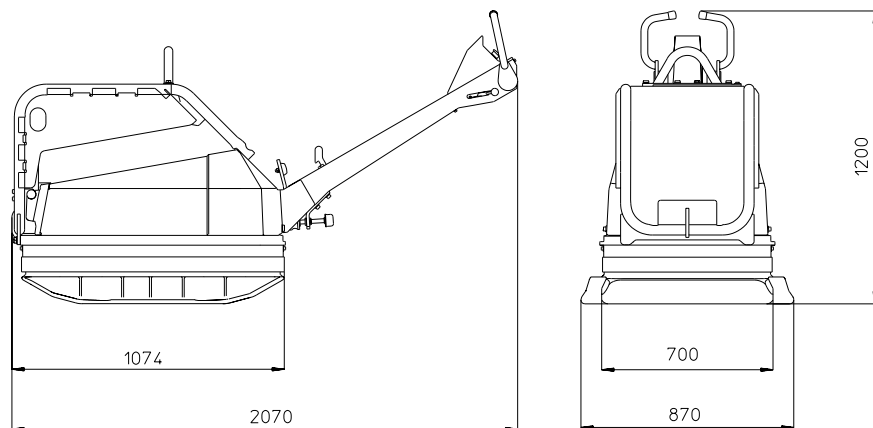
Description

4. Description

4.1 Field of applications

The DPU 100-70 is optimally suited for all types of soils, including semi-cohesive soils, in trench and surface compaction applications.

4.2 Dimensions



4.3 Recommendations on compaction

4.3.1 Ground conditions

The max. compaction depth depends on several factors relating to the ground condition, such as moisture, grain distribution etc, it is therefore not possible to specify exact values.

Recommendation: In each case determine the max. compaction depth with compaction tests and soil samples.

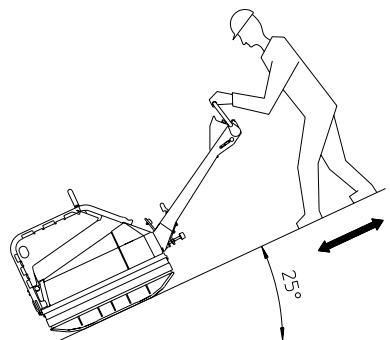
4.3.2 Compaction on slopes

The following points are to be observed when compacting on sloped surfaces (slopes, embankments):

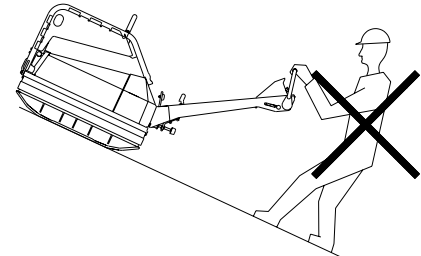
- * Only approach gradients from the bottom (a gradient which can be easily overcome upwards, can also be compacted downwards without any risk).
- * The operator must never stand in the direction of descent.
- * The max. gradient of 25° must not be exceeded.



A tilt in excess of this angle could lead to a stopping of the engine due to the automatic low oil shut-off system. A restarting of the engine can only take place after the valve lever at the oil filter housing has been actuated once.



Right !

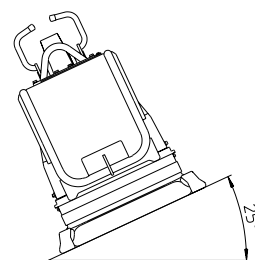
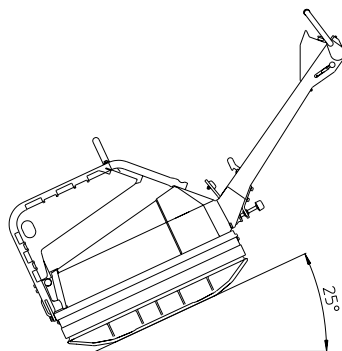


Wrong!

4.4 Compaction without extension plates

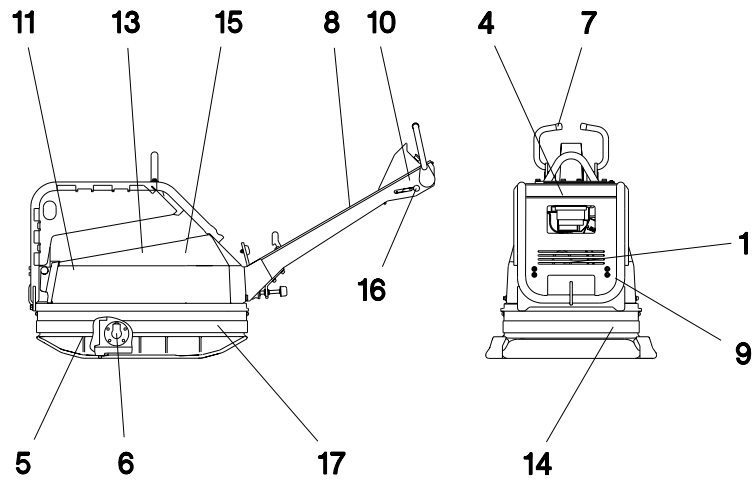
If the vibration plate is used without extension plates, screw set of protective screws (8 pes) into the threaded boreholes situated in the lower mass, in order to avoid threads from being damaged.

4.5 Max. admissible inclination

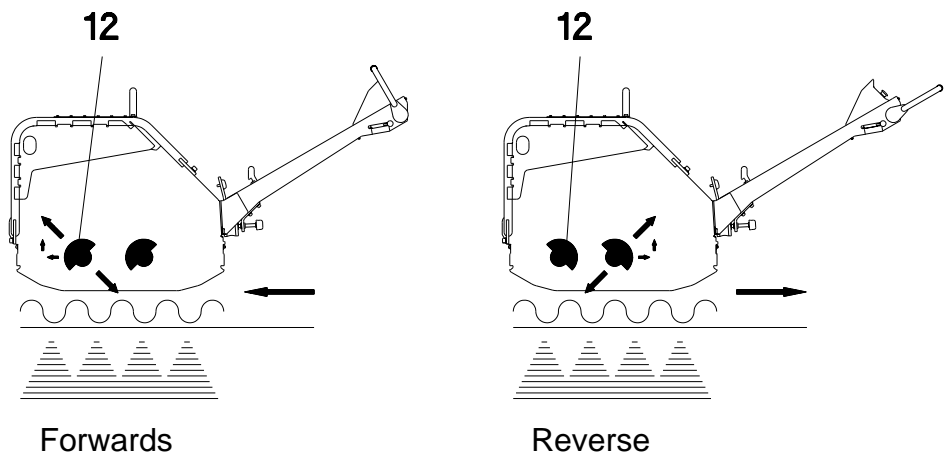


Description

4.6 Description of function



- 4.6.1 The vibration required for compaction is generated via the exciter (6) which is firmly connected to the base plate (5). The exciter (6) has been designed as a centrally mounted exciter with single plane (directional) oscillations. This principle allows for the changing over of the direction of the oscillations by changing the relative position of the eccentric weights (12). Said principle also makes it possible to pass from forward travel to reverse travel motion.

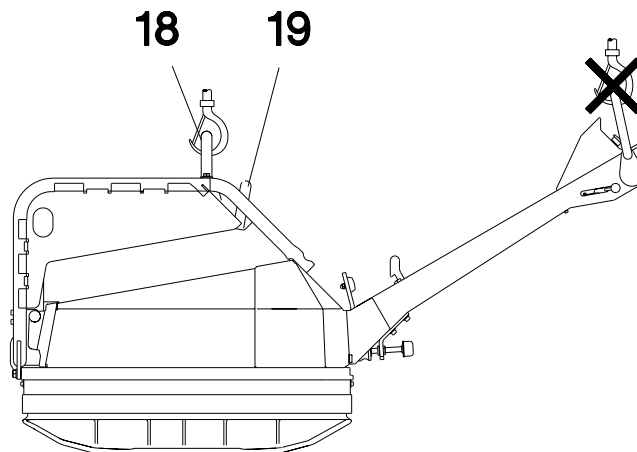


- 4.6.2 This procedure is hydraulically controlled by way of the operating control handle (7) situated at the upper end of the center pole (8) and an electrically operated disable switch (9), which receives a switch signal from a roll touch switch (10) placed at the center pole head. An oil flow governor valve (15) supplies the steering line with a partial oil flow.

- 4.6.3 The exciter (6) is driven by an hydraulic motor (14). The oil flow required for the motor (14) comes from the pump (13), which in turn is driven by the drive engine (1).
- 4.6.4 The rpm's of the drive engine (1) can be adjusted by way of the remote throttle lever (16) (normally in the full throttle position).
- 4.6.5 The upper mass (11) and the base plate (5) are connected to each other by way of 4 vibration damping shock mounts (17). The damping effect reduces to a high degree the vibrations being transmitted from the base plate (5) to the upper mass (11), thereby protecting the engine and simultaneously providing for an easy maneuverability of the machine by the operator.

Transport to work site

5. Transport to work site



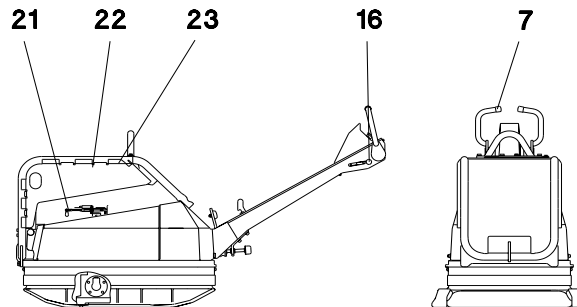
Conditions:

- * To transport the vibration plate, only use suitable lifting equipment with a minimum load-bearing capacity of 800 kg.
- * Always switch off engine before transporting the machine!
- * Only attach suitable tackle at the central lifting point (18) provided. The central lifting point is located exactly above the centre of gravity of the machine. The central lifting point can be displaced rearwards (19), given an application in which the height of the machine is of importance (torque wrench setting = 85 Nm).
- * Be sure to tie down the machine at the appropriate points during transportation on transport vehicles.

Note: Also observe the regulations in the “safety instructions“.

6. Operation

6.1 Starting



6.1.1 Conditions:

Engine oil:

Check oil level with dipstick (21), top off with oil (see Technical Data) through filler neck (22) if necessary.

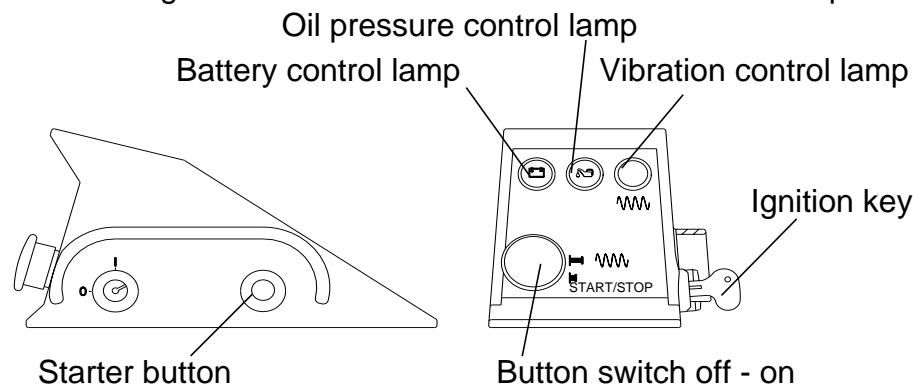
Fuel:

Maintain absolute cleanliness when filling diesel fuel into the fuel filler neck (23). Impurities in the fuel can cause breakdowns in the injection system and premature clogging of the fuel filter.

Air filter:

Clean cyclone and air filter when in the presence of a lot of dust.

6.1.2 Start the engine once the above conditions have been complied:



1. Turn throttle control lever (16) to full engine speed position.
2. Press push-button switch to start position.
3. Turn ignition key to position „I“ and then push starter button as long as it takes to start the engine.
4. Turn throttle control lever (16) back to engine idle position and then let engine warm up at that speed for approx. 7 minutes.

Operation

6.2 Forward and reverse motion

1. Push throttle control lever (16) to full rpm's position.
2. The vibration is connected by pulling the press button switch out of the start position.
3. The travel direction is defined by way of the operating control handle (7).
4. The vibratory plate will automatically travel forwards (away from the operator) if the operating control handle (7) is released (dead man's handle).

6.3 Switching off

1. Push down press button switch from vibration position to stop position. The control lamp will extinguish.
2. Move throttle lever (16) all the way to the stop position.
3. Turn the ignition key to the stop position and pull off once engine has stopped turning. The control lamp will turn off.

7. Maintenance

7.1 Maintenance schedule

Component	Maintenance work	Maintenance interval
Air filter	Check cyclone and oil bath air filter - change oil and clean cyclone if necessary.	daily
Drive engine	Check oil level, if nec. top up oil.	
	First oil change.	25 hours
Centre pole height setting, transport lock	Regrease.	weekly
Hydraulics	Check oil level, top up if necessary.	monthly
Exciter	Oil change.	every 250 h, or latest every 6 months
Drive engine	Oil change, change oil filter.	every 250 h
	Keep cooling fins free of dirt, clean dry.	
Battery	Check acid level, if nec. top up with distilled water.	
Valve clearance	Check, set to 0,1 mm when engine is cold.	
Hydraulics	First oil change.	500 hours
Fuel filter	Change fuel filter.	every 500 h
Hydraulic fluid filter	Change hydraulic fluid filter.	
Hydraulics	Oil change.	every 1000 h

Maintenance

7.2 Oil bath air cleaner

Examination of dirt accumulation within the transparent preliminary filter (cyclone); Remove clamp if cleaning is necessary, then off the cyclone and tap clean..

Cyklone



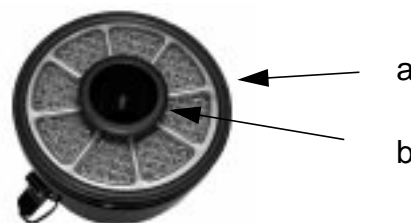
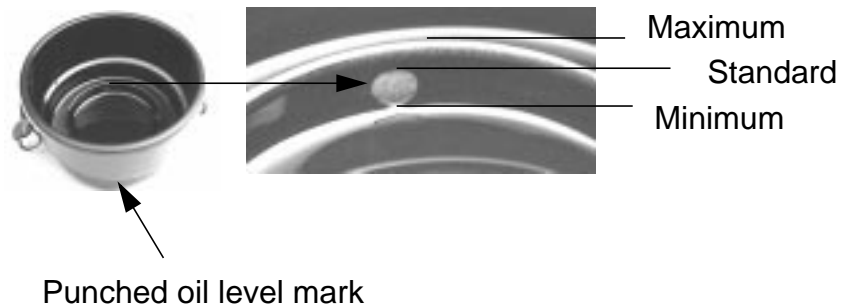
Control and oil quantities:

The cover of the air cleaner must be removed for an oil level check. Open both clamps for this purpose. The oil volume has been defined by the engine manufacturer (0,3 Liter 10W40). For this purpose a stamped marking for the oil level has been included at the cover of the oil bath filter. For all practical purposes it is easier to determine the quantity of oil by way of the borings included in the ring integrated in the cover.

The oil quantities have been defined as follows:

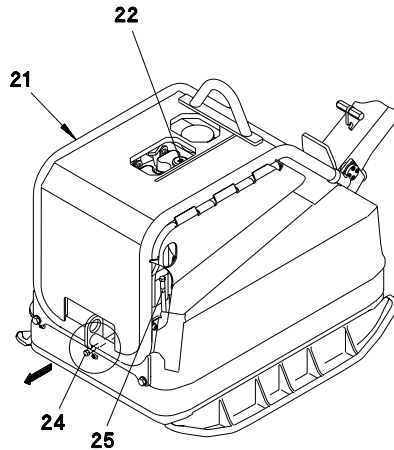
- * Minimum -Oil up to lower edge of boring
- * Standard -Oil up to upper edge of boring
- * Maximum -Oil up to upper edge of ring

Attention: Do not fill oil above maximum mark under any circumstances.



Note: Pay attention when assembling the cover that the gasket (a) and the leathering (b) of the filter's insert are available and in the right position.

7.3 Engine oil level control



The engine must be placed in a horizontal position on a flat surface for the oil level check.

7.3.1 Check engine oil level:

- * Check oil level on oil dipstick (21).
- * Top off with oil (see Technical Data) through filler neck (22) if oil level is too low.

7.3.2 Engine oil replacement:

1. Let engine warm up.
2. Loosen screw (25) at the engine/clamp.
3. Guide hose outwards through the large opening in the protective frame.
4. Fully unscrew drainage screw (24) and fill used oil into an appropriate container.
5. Screw in drain plug (24) and install hose back onto engine.
6. Fill oil (see Technical Data) through filler neck (22).



Take notice: Please pay attention to the corresponding environmental laws when disposing of used engine oil. We recommend you carry the oil in a container to a central collecting point for used oils. Do not pour used engine oil into the garbage nor into the sewer system, waste pipes or even on the ground.

Maintenance

7.4 Battery acid level control

7.4.1 Check battery acid level

1. Open right maintenance cover.
2. Check acid level and top up with distilled water if necessary.
3. Close maintenance cover again.



Be sure to check if the positive pole cover is in the correct position before closing the maintenance cover.

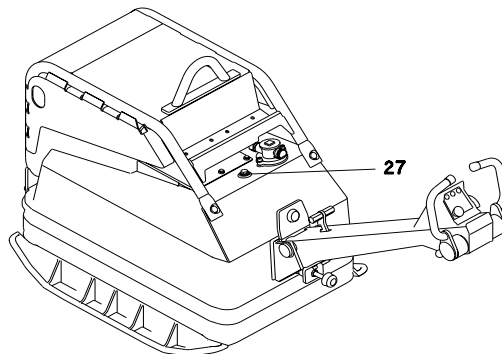
Note: Only replace a defective battery with an original Wacker battery. Conventional batteries are not designed to withstand the high vibration load.

7.4.2 Replace battery

Removal: first disconnect the negative, then the positive pole.

Assembly: first connect the positive, then the negative pole.

7.5 Hydraulic oil level control



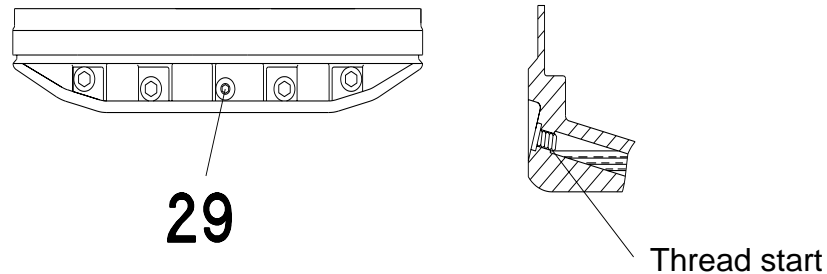
Check oil level:

1. Screw out screwed sealing plug (27).
2. The hydraulic oil level must reach a point 10 cm (2.9") below the upper edge of the screwed neck. Top off with oil (see Technical Data) if necessary.
3. Screw screwed sealing plug (27) back in.

Bleeding the hydraulic system:

Bleeding of the hydraulic line to the exciter will be required after repair/maintenance jobs of the hydraulic circuit for forwards and reverse travel have taken place.

7.6 Exciter oil level control



7.6.1 Check exciter oil level

1. Position vibration plate horizontally.
2. Open filler bore (29).
3. The oil level must reach the start of the thread of the filler bore (29).
4. Top off with oil (see Technical Data) through filler neck (29) if necessary. Use a funnel for this purpose.
5. Close filler bore (29). (Tightening torque 100 Nm)

7.6.2 Exciter oil replacement

1. Remove extension plate if necessary.
2. Open filler bore (29).
3. Tilt vibratory plate on its side; make sure it can't topple over. Hold in tilted position until the exciter oil has been completely drained.
4. Place vibration plate in horizontal position.
5. Top off with oil (see Technical Data) through filler neck (29).
6. Close filler bore (29). (Tightening torque 100 Nm)
7. Install back extension plate if necessary.

Do not pour in too much oil!



Faults

8. Faults

8.1 Troubleshooting and fault clearance

Faults	Cause	Remedy
Forward or reverse travel too low	Relief pressure forwards/backwards too low.	Set pressure relief valve correctly (only Wacker personnel).
	Exciter rpm's too low.	Adjust engine speed and check pressure valve (only Wacker personnel).
Loss of hydraulic oil	Leaks, hydraulic hose defective.	Change defective parts. Note: Bleed system after every dismantling operation.
Oil pressure control lamp does not go off	Low engine oil level.	Top up with oil following markings on dip stick.
	Plugged up oil filter.	Clean or replace oil filter.
Battery-charge warning lamp does not go off	Dynamo defective.	Contact Wacker service dept.
	Control unit defective.	Replace control unit (on rear of the dynamo).
Engine starts with difficulty	Button switch at control panel is not set to start position.	Set button switch to start position.
	Throttle lever is not in full rpm's position.	Move throttle lever towards machine into full throttle position.
Engine does not start	Ignition lock defective.	Change defective parts.
	Starter defective.	
	Starter button defective.	
	Battery flat.	Charge battery.
	Vibration connected.	Disconnect vibration.

8.2 Starting with external battery etc.

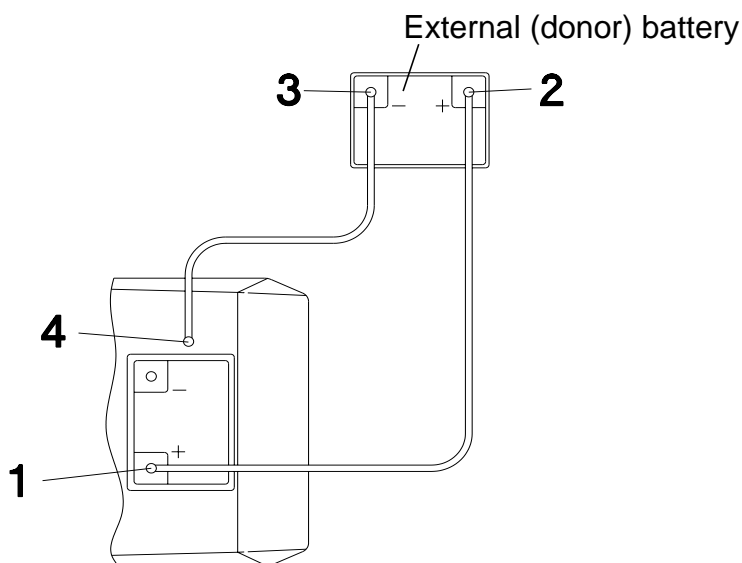
8.2.1 Essential requirements for battery jumper cable:

- * Cable cross-section must be at least 16 mm². (2.5 sq. inches).
- * Clamps must be completely insulated with plastic.



Only connect 12 Volt batteries. The on-board battery will explode if connected to a 24 Volt truck battery!

The use of starter sprays is absolutely forbidden!



8.2.2 Pay close attention to the following connection sequence when jump-starting with an external battery:

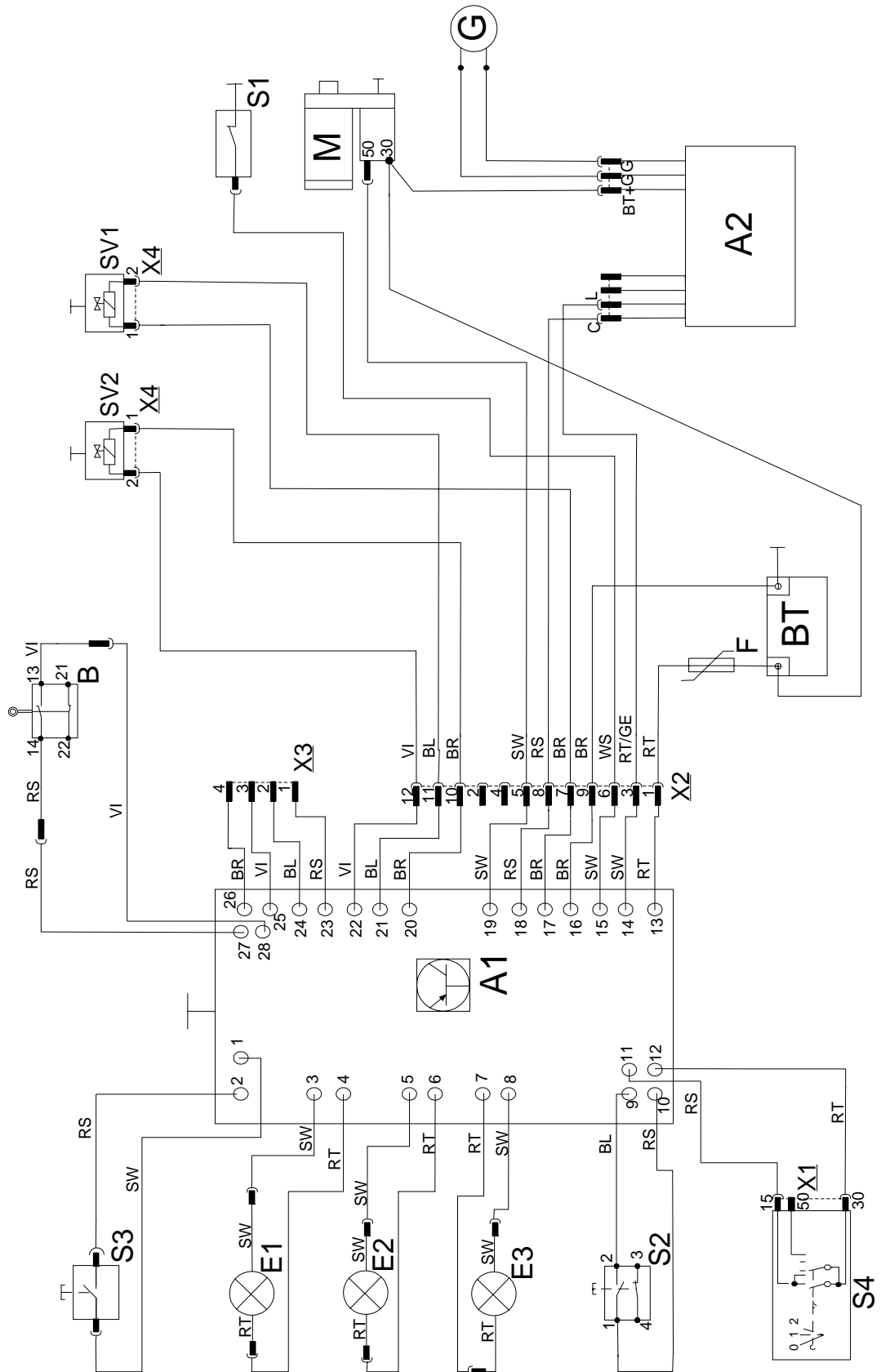
1. Connect the red jumper cable with the help of a clamp to the positive pole (1) of the discharged battery.
2. Connect the other clamp of the red jumper cable to the plus pole (2) of the external (donor) battery.
3. Connect the black jumper cable with the help of a clamp to the negative pole (3) of the external battery.
4. Connect the other clamp of the black jumper cable to a grounding point of the machine (4), e.g. to the engine block.

8.2.3 Connect the black jumper cable to the negative pole (3) of the external battery.

8.2.4 Disconnect the clamps in reverse order; first remove the black jumper cable, then the red one.

Electricwiring diagram

9. Electricwiring diagram



9.0.1 Components

Pos.	Description	Pos.	Description
A1	Electronic control component	S1	Oil pressure switch
A2	Regulator	S2	Push-button switch
B	Limit switch	S3	Push-button start
BT	Battery	S4	Ignition starter switch
E1	LED lamp vibration	SV1	Solenoid valve vibration
E2	LED lamp oil pressure	SV2	Solenoid valve forward/reverse travel
E3	LED lamp charge control	X1	Master plug
F	Automatic reset fuse MF800 Bourns	X2	AMP plug connector 12 poles
G	Alternator	X3	AMP plug connector 4 poles
M	Starter	X4	Plug connector mPm B-12

9.0.2 Pin assignment A1 (electronic control component)

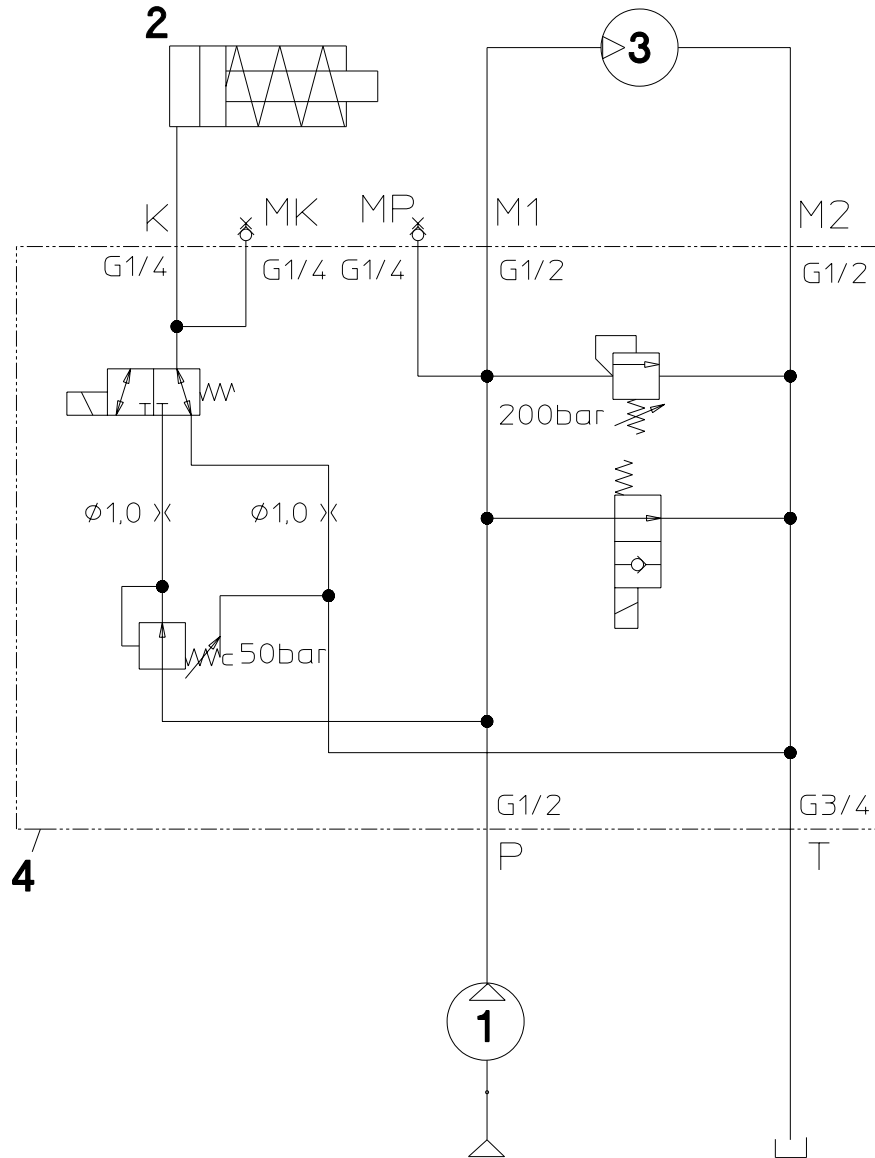
Pos.	Description	Pos.	Description
1	Pressure switch start +	15	X2, oil pressure switch
2	Pressure switch start	16	X2, GND
3	LED lamp vibration -	17	X2, solenoid valve vibration GND
4	LED lamp vibration +	18	X2, regulator connection C
5	LED lamp oil pressure -	19	X2, regulator connection C
6	LED lamp oil pressure +	20	X2, solenoid valve forward/reverse GND
7	LED lamp charge control +	21	X2, solenoid valve vibration +
8	LED lamp charge control -	22	X2, solenoid valve forward/reverse +
9	Push-button switch vibration	23	X3, optional, IR transmitter/ receiver unit, +12V
10	Push-button switch vibration +	24	X3, optional, IR transmitter/ receiver unit, vibration
11	Ignition starter switch terminal 15	25	X3, optional, IR transmitter/ receiver unit, V/R
12	Ignition starter switch terminal 30	26	X3, optional, IR transmitter/ receiver unit, GND
13	X2, +12V	27	Limit switch forward/reverse +
14	X2, regulator connection L	28	Limit switch, forward/reverse

9.0.3 Conductor (cable) colors

Abbr.	Color	Abbr.	Color
BL	blue	RS	pink
BR	brown	RT	red
GE	yellow	SW	black
GN	green	VI	purple
GR	gray	WS	white
OR	orange	TR	transparent

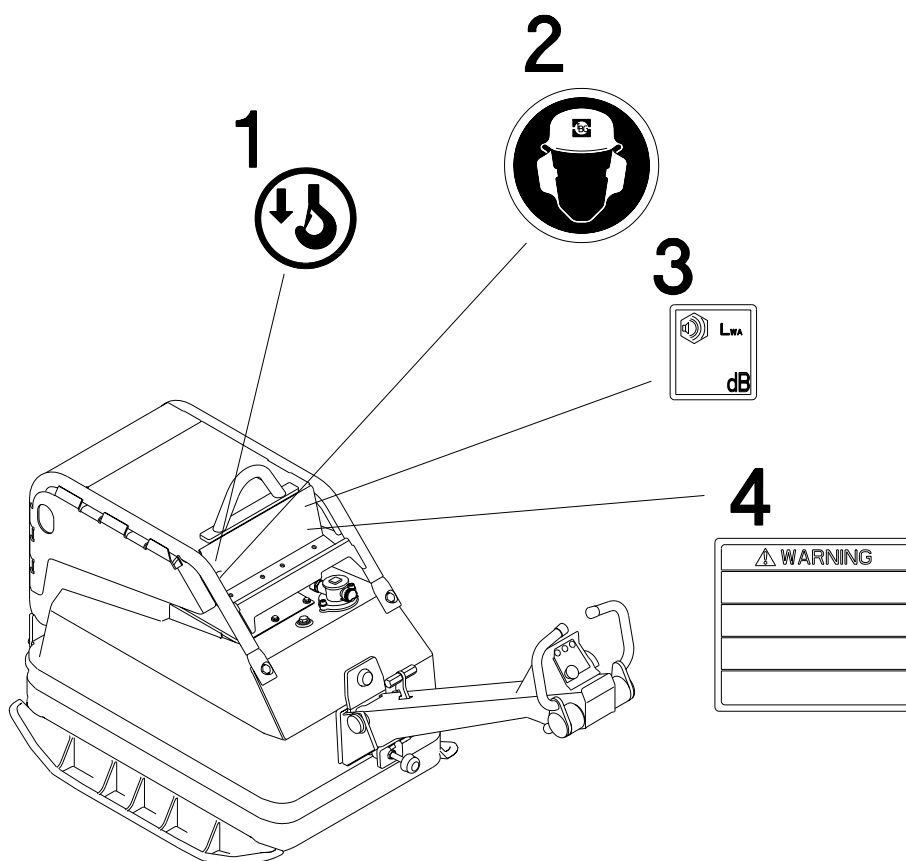
Hydraulic connections diagram

10. Hydraulic connections diagram



1	Gear pump
2	Advance/reverse control
3	Exciter drive
4	Block-Hydraulic

11. Lables



1	Notice-Lifting point
2	Ear protection decal
3	Sound power level
4	Warning notice - Do not run without protective devices. - Read operator's manual in detail.

EG - Konformitätserklärung EC - Conformity Certificate

Wacker Construction Equipment AG , Preußenstraße 41, 80809 München

bescheinigt, daß das Baugerät:

hereby certify that the construction equipment specified hereunder:

1. Art / Category:

Vibrationsplatte / Vibratory plate

2. Typ / Type:

DPU 100-70

3. Gerätetypnummer / Equipment item number:

0008900 ..., 0008991 ...

4. absolute installierte Leistung / Absolute installed power:

14,9 kW

in Übereinstimmung mit Richtlinie 2000/14/EG bewertet worden ist:

has been evaluated in conformity with Directive 2000/14/EC:

Konformitätsbewertungsverfahren Conformity assessment procedure	Bei folgender einbezogener Prüfstelle At the following notified body	Gemessener Schallleistungspegel Measured sound power level	Garantierter Schallleistungspegel Guaranteed sound power level
Anhang VIII Annex VIII	VDE Prüf- und Zertifizierungsinstitut Zertifizierungsstelle Merianstraße 28 63069 Offenbach/Main	109 dB(A)	109 dB(A)

und in Übereinstimmung mit folgenden Richtlinien hergestellt worden ist:

and has been manufactured in accordance with the following directives:

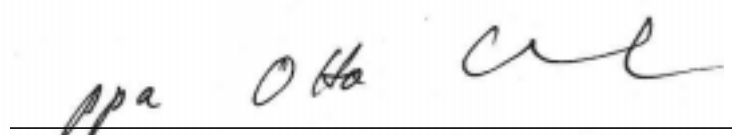
2000/14/EG

2004/108/EG

98/37/EG

EN 500-1

EN 500-4



Dr. Stenzel

Leitung Forschung und Entwicklung
Research and Development Management

VDE Prüf- und Zertifizierungsinstitut

VDE VERBAND DER ELEKTROTECHNIK
ELEKTRONIK INFORMATIONSTECHNIK e.V.

CERTIFICATE

Registration-Number: 6236/QM/06.97

This is to certify that the company

WACKER



**Wacker Construction Equipment AG
Wacker-Werke GmbH & Co. KG**

at the following locations

**Head Office Munich
Preußenstraße 41
80809 Munich**

**Production plant Reichertshofen
Karlsfeld logistics centre
Sales regions with all branches all over Germany**

has implemented and maintains a
Quality Management System for the following scope:

**Machine manufacture
Construction machines**

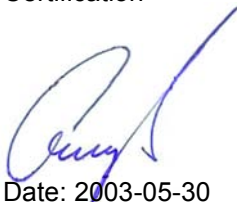
This Q System complies with the requirements of

DIN EN ISO 9001:2000

and the requirements of the German and international Road Traffic Act.

This Certificate is valid until 2009-06-05.

VDE Testing and Certification Institute
Certification



Date: 2003-05-30

63069 Offenbach, Merianstraße 28
Telefon: +49 (0) 69 83 06-0, Telefax: +49 (0) 69 83 06-555
E-Mail: vde-institut@vde.com, <http://www.vde-institut.com>



The VDE Testing and Certification Institute is accredited by DAR Accreditation
Bodies according to DIN EN ISO 17020 and DIN EN ISO 45012 and notified in the EU
under ID.No. 0366.

TGA-ZM-09-92-00
KBA-ZM-A 00021-97

