HIRD GLASS

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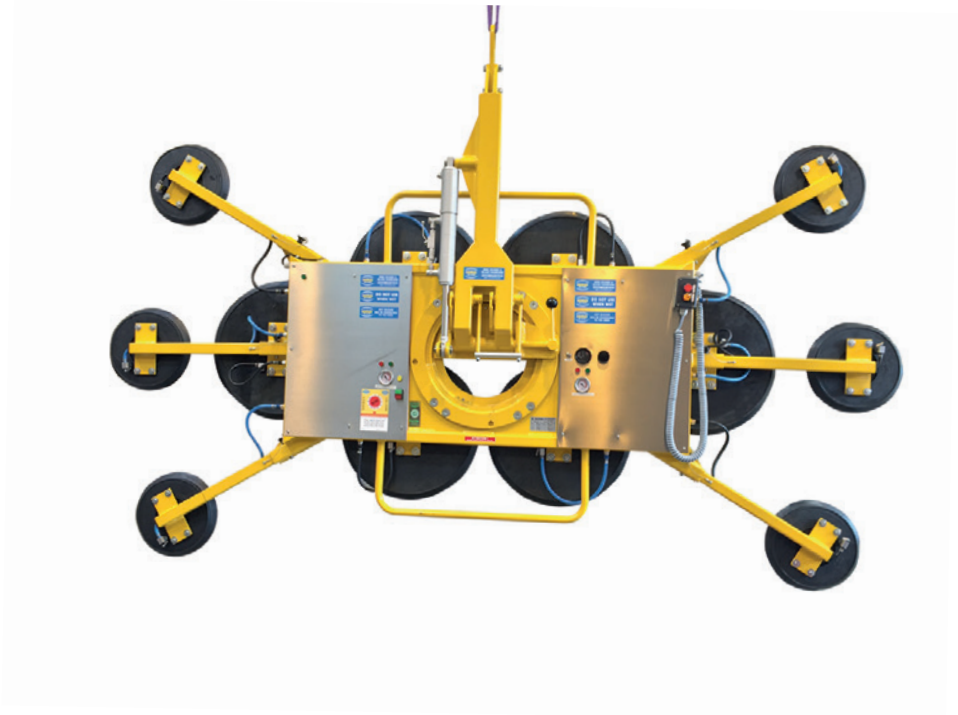
OPERATOR MANUAL

KAPPEL

DSZ3 - SLIMLINE



Northern (Head Office)
Tel: +44 (0)1482 227333

Central
Tel: +44 (0)1302 341659

Western
Tel: +44 (0)1384 900388

Southern
Tel: +44 (0)203 174 0658

DISCLAIMER - ALL INSTRUCTIONS ARE SUPPLIED FROM MANUFACTURER AND WHERE CORRECT AT TIME OF PRINT

Contents

Foreword

These operating instructions are intended to help you become familiar with the DSZ2-12V and to use it as intended.

These operating instructions contain important instructions about operating the DSZ2-12V safely, effectively, and economically. Observing them helps to avoid repair costs and down time and to increase the reliability and working life of the DSZ2-12V.

These operating instructions must be supplemented by additional instructions due to existing national accident prevention regulations.

These operating instructions must always be available at the site of use of the DSZ2-12V

These operating instructions must be read and observed by every person responsible for doing work on the DSZ2-12V, for example:

- operation, including equipping, troubleshooting during operation, removal of production waste, care
- maintenance (servicing, inspection, repair) and/or
- transport.

In addition to the operating instructions and binding accident prevention regulations applicable for the country of use and the application case, the recognised technical rules for safe and professional work must also be observed.

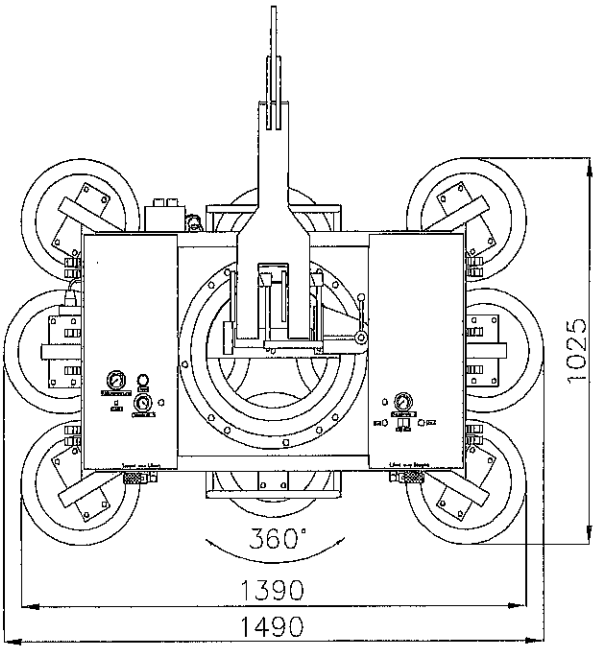
If you discover errors when reading these operating instructions, or if you have further comments or suggestions, please contact:

Kappel Flachglastechnik GmbH
Schlachthofstraße 3-5
87700 Memmingen

The management appreciates your cooperation.

Technical description

The DSZ2-12V is a combination of six vacuum pumps with power supply (battery including charger) and a vacuum cross arm with two vacuum circuits working independently from each other. This vacuum cross arm has two-row sucker arrangement and is intended for flexible use on construction sites, on various crane systems, etc., anywhere where no 220 to 240 volt connection is available. Using the DSZ2-12V, the transported goods can be rotated 360 degrees and also be swivelled 90 degrees.
The DSZ2-12V is hung on a crane hook and is supplied with energy via the installed batteries. In addition to easy installation on a crane or similar device, the DSZ2-12V also offers the safety advantage that in general no vacuum supply hose or voltage supply line is required as is the case with separated devices (cross arm, vacuum pump). In addition, it is also possible to lower transported goods during a power outage with this type of device as long as the vacuum circuit is perfectly sealed, because the vacuum reserve tank is located on the vacuum cross arm.



In detail, the device consists of a rectangular tubular casing with suspension eye, the basic frame. A second rectangular pipe frame is connected to this basic frame first via a swivelling joint and then via a rotating joint. This frame is the carrier frame and the basic frame simultaneously forms the two vacuum reserve tanks and holds the vacuum pumps, the battery charging device, and the battery. The suckers are also mounted on the carrier frame. The sucker connections are supplied with a vacuum (suction) or normal compressed air (releasing) by means of the manual valves (suction/release valves) of the two vacuum circuits. You can also switch from suction to release by using the remote control. Two inspection vacuum meters provide information on the exact pressure ratios in the vacuum lines to the individual suckers. A voltage display indicates the battery charge level.

The charging circuit voltage for the charger is 220-240 volt AC (50/60 Hz).

Six vacuum pumps are used to generate the vacuum (three vacuum pumps / vacuum circuit). The vacuum pumps work without oil lubrication and are therefore maintenance-free

In order to avoid draining the battery unnecessarily, the pump switch has a two-point controller that switches off the vacuum when the pressure reaches -0.72 bar in the vessel, switches the pumps off and switches the pumps back on when the pressure falls below approx. -0.68. This avoids premature draining of the battery due to the pumps being allowed to run unnecessarily. The battery is maintenance-free and enclosed; they are totally discharge-safe.

Mode of operation

Switch the machine on using the ON/OFF switch. Then first of all set the two manually-operated suction/release valves to RELEASE. The vacuum cross arm must be positioned on the load to be transported in such a way that all suckers are flat on the smooth clean surface so that the sucker lips can seal completely. Set both suction/release valves to SUCTION and wait until the pumps of both vacuum circuits switch off. You can check the vacuum using the vacuum meters 1 and 2 on the device. If there is a vacuum of –0.72 bar in both vacuum circuits, the load can be transported. To release the suckers from the load, set the two suction/release valves to RELEASE.

Attention
The DSZ2-12V must **NEVER** be commissioned when there is only **one** functioning vacuum circuit.

Basic safety information

Warning instructions and symbols

The following terms and symbols are used in the operator's manual for especially important information:

Note Special information regarding the economical use of the device

Caution Special information regarding requirements and prohibitions for preventing damage.

Danger Information or requirements or prohibitions for protecting people or preventing extensive damage.

Authorised use

The DSZ2-12V has been constructed in accordance with the state of the art and recognised safety regulations. Nevertheless, its use may result in danger to life and limb of the operator or third parties and impairment of the machine or other property may occur.

The machine may only be used when in technically perfect condition, as authorised. The user must be conscious of safety and risks and act in accordance with the instructions. Failures which can interfere with safety must be eliminated immediately.

The DSZ2-12V is exclusively for transporting gas-tight, dry materials with firm, flat surfaces. Other use or use going beyond this, for example transporting gas-permeable materials, film-covered materials, wet materials, or rotating or swivelling large or heavy transported goods is not authorised. The manufacturer/supplier is not liable for the damages resulting from this. The user bears the risk alone.

Use as authorised use also includes complying with the operating instructions and the inspection and maintenance conditions.

Organisational measures

Always keep the operating instructions within reach at the site of use.

In addition to the operating instructions please observe and teach any other generally applicable statutory regulations concerning accident prevention.

Such obligations can also include providing and wearing personal protective equipment.

Please supplement the operating instructions with instructions including supervision and reporting obligations taking into consideration operational corporate circumstances, e.g. relating to work organisation, work processes, personnel used.

The personnel authorised to operate the device must read the operating instructions, particularly the chapter about safety instructions before starting work. It is too late to read the instructions if work has already been started. This applies in particular to personnel who only work on the machine occasionally, e.g. for equipping it and carrying out maintenance work.

Occasional checks should be carried out to ensure that the members of personnel follow the instructions and work in a safety-conscious manner and are aware of risks.

If necessary or if required by regulations, personal protective equipment should be used. Glass should only be transported with the appropriate protective equipment (safety shoes, protective gloves, wrist protectors, helmet etc.) A helmet should be worn at all times when transporting goods above head height.

All safety and danger instructions on the device should be complied with.

All safety and danger instructions on the device should be kept complete and in legible condition.

If there are any safety-related changes to the device or its operation, the device should be stopped immediately and the malfunction should be reported to the relevant office or person.

No changes, attachments or upgrading work that could possibly impair safety should be carried out on the machine without the consent of the suppplier. This also applies to the installation and setting of safety equipment and valves as well as to welding on load-bearing parts.

Spare parts must fulfill the technical requirements specified by the manufacturer. This is always guaranteed with original replacement parts.

Vacuum hose lines should be replaced at the specified intervals or at appropriate intervals, even if there are no recognisable safety defects.

Compulsory deadlines or those specified in the instructions for recurring tests / inspections should be complied with

Appropriate workshop equipment is absolutely necessary for performing the maintenance measures.

Personnel selection and qualification

Work on/with the machine may only be performed by reliable personnel. The legal minimum working age should be observed.

Use only trained or instructed personnel; responsibilities among personnel should be clearly established for operation, equipping, maintenance, and repair.

Ensure that only authorised personnel works on the machine.

Specify a person who is responsible for operating the machine and give him/her the opportunity to refuse to comply with the safety instructions of third parties.

Personnel being trained or instructed, or who are taking part in a general training programme, may only work on the machine when under the constant supervision of an experienced person who is familiar with this situation.

Work on the electrical equipment of the machine may only be performed by an electrician or by trained personnel under the direction and supervision of an electrician in accordance with the rules of electrical engineering.

Safety instructions on particular operating phases

Normal operation

Avoid all unsafe work practices.

Before starting work, become familiar with the working environment at the site of use. The working environment includes impediments in the work and traffic area, the load bearing capacity of the floor, and cordoning off the worksite from public traffic areas.

Take measures to ensure that the machine is only operated when safe and functional.

Check the machine for externally recognisable damages and flaws at least once per shift. Report any changes that occur (including those to the operating behaviour) immediately to the responsible office/person. If necessary, stop the machine immediately and secure it!

During malfunctions, the machine should be stopped immediately and secured. Malfunctions should be corrected immediately.

The switching on and off procedures should be complied with, and the inspection displays should correspond to the operating instructions.

Always stop work if it becomes dark or if visibility is poor!

Special work

The setting, maintenance, inspection activities and deadlines, including information on replacement of parts and modules stipulated in these operating instructions must be observed. These activities may only be performed by authorised specialists.

Only perform maintenance and repair work when the machine is positioned on flat ground with sufficient bearing capacity and is secured so that it cannot roll away or collapse.

Clean machines, particularly connections and screw connections at the beginning of maintenance/repair work. Do not use aggressive cleaning agents! Use lint-free cloths for cleaning.

Never clean the machine with water or steam jet (high-pressure cleaner).

After cleaning, inspect all vacuum lines for leaks, loosened connections, abrasion and damage. Repair any flaws immediately!

Always tighten screw connections loosened during maintenance and repair work.

Safety instructions for special types of danger

Electrical power

Use only original fuses with the specified current strengths. Switch off the machine immediately during malfunctions to the electrical energy supply.

Work on electrical equipment or operating materials may only be performed by an electrician or by trained personnel under the direction and supervision of an electrician in accordance with the rules and regulations of electrical engineering.

Machine and system parts on which inspection, maintenance, or repair work must be performed, must be switched free of current if required. First check the switched off parts to ensure that they are free of voltage, then ground and short-circuit them, and insulate neighbouring live parts.

The electrical equipment of the machine must be checked regularly. Flaws such as loose connections and melted cables must be repaired immediately.

Oils, greases, and other chemical substances

Observe the safety regulations applicable for the product when using oils, greases, and other chemical substances!

Commissioning

Note

- Do not store the DSZ2-12V in a damp or very cold (frost) environment. Otherwise there is no guarantee that the installed pump will function properly.

Caution

- Always ensure that the suckers are not placed on sharp edges because this could damage the sucker lips. This would lead to leaks in the suction circuit, impairing the functioning of the device.
- Never place the machine with mounted suckers with the rubber surfaces of the suckers on sandy or similar ground. This could damage the sealing lips of the suckers. This would lead to leaks in the suction circuit, impairing the functioning of the device. Or the grains of sand or similar substances could be pressed into the rubber surfaces, leading to damage to the upper surface of the transported goods.

Danger

- Do not allow heavy rain to fall on the DSZ2-12V.
- Do not place the DSZ2-12V in water.
- Do not convey loads over persons or machines. Cordon off the area under hanging transported goods with wide clearance.

Recharging the battery

Check the DSZ2-12V for any externally recognisable damages or flaws.

Compare the connection on the power supply network and check the voltage, current and mechanical connection (plug connection) with the necessary data for the vacuum pumps. If they do not correspond, the machine may not be operated.

Connect the DSZ-12V to the supply network (9) using an extension cable.

The recharging procedure can be checked in voltage display (13) after pressing the test (12) button.

After the recharging procedure is completed, a value of 100% must be visible in the voltage display (13) when Test button (12) is pushed.

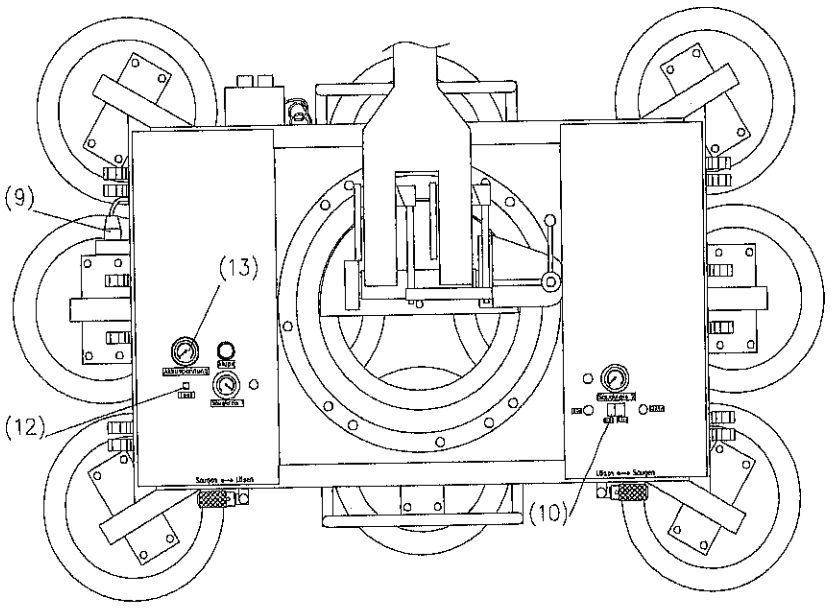
The battery (20) is charged after a maximum of 12 hours.

Remove the extension cable from the supply network.

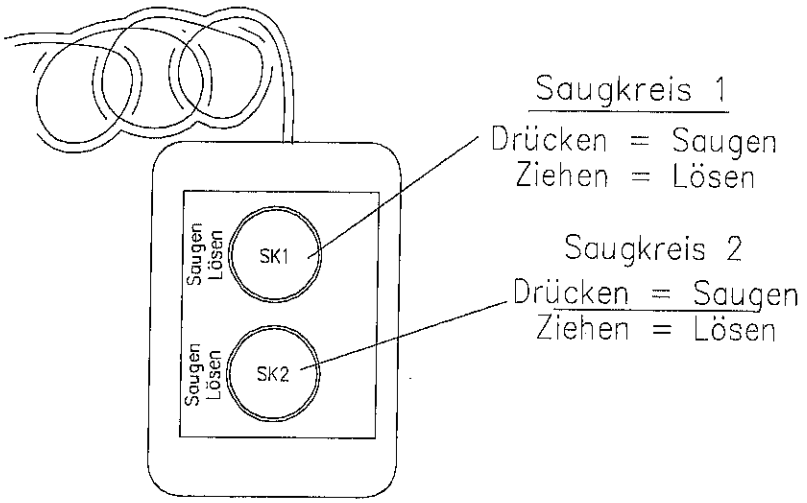
This completes the recharging procedure.

Note

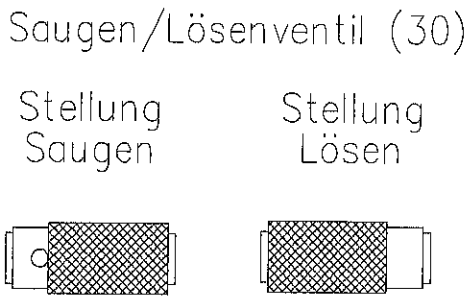
After the transporting work is completed, switch the device off with the switch (10) in order not to drain the battery unnecessarily.



The remote control



The manual valve (suction/release valve)



Attention
It is only possible to switch between suction and release with the remote control when the manual valve (suction/release valve) is on suction.

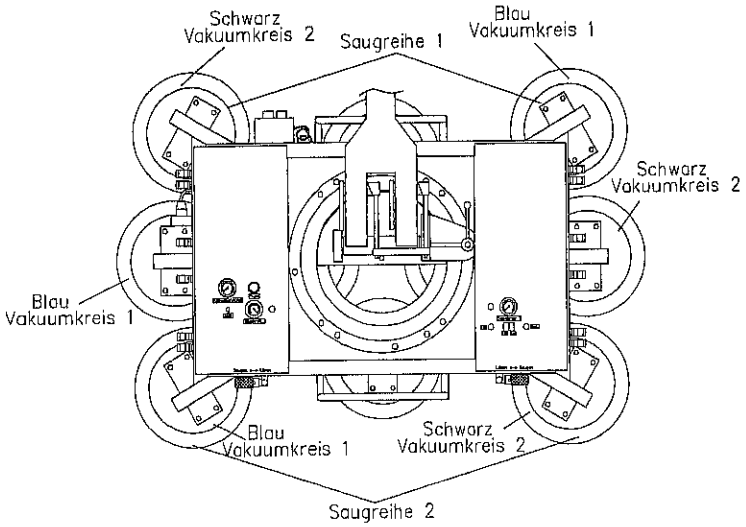
Attaching the suction pads to the DSZ2-12V

Attention
-Blue hose line = vacuum circuit1 = vacuum coupling blue
-Black hose line = vacuum circuit2 = vacuum coupling black

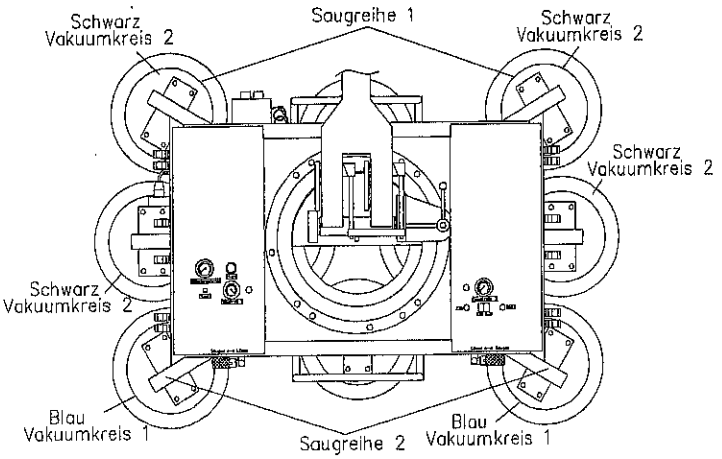
Attention
The suction pads on the DSZ2-12V must always be attached in such a way that vacuum circuit 1 and vacuum circuit 2 are connected in every suction row see (A).

The suction pads must never be attached in such a way that only one vacuum circuit is connected in suction row (B).

(A)



(B)



Before transporting

Check the DSZ2-12V for any externally recognisable damage or flaws.

Hang the DSZ2-12V from the suspension eye (1) on a crane hook or similar device.

Then set the two manually operated suction/release valves (2.1 and 2.2) to the RELEASE position.

Switch the machine to ON using the on/off switch (10). The pumps must start up if the vacuum is insufficient. The control indicator light (16) indicates that the pumps are active. If this is not the case, working with the DSZ2-12V is not permitted (see Troubleshooting).
The two control lamps vacuum (14.1 and 14.2) and the signal tone (11) signalise insufficient vacuum in the lines to the suckers. These signals depend on the vacuum in the vacuum reserve tanks. The existing vacuum in the suction frame of both vacuum circuits can be checked on the two vacuum meters (3.1 and 3.2).

After a short time, a vacuum of at least -0.65 bar should have built up in each tank. The vacuum pumps switch off when -0.72 bar vacuum is reached. This should be the case after a short time.

In order to check the vacuum, either one larger pane or several smaller panes of a gas impermeable material are required. These panes are held onto the individual suckers and are then sucked on. To do so, the suction/release valves (2.1 and 2.2) must be set to SUCTION. A vacuum of at least -0.65 bar should build up immediately in each vacuum circuit. If this happens, the machine switch (10) must be switched off. Read the achieved vacuum from the inspection vacuum meters (3.1 and 3.2) and compare it with a reading taken about 15 minutes later on the two control vacuum meters (3.1. and 3.2). If there is no discrepancy, the device is leak-tight and safe to operate. If a discrepancy of more than 5% occurs, the DSZ2-12V must be checked to find the leak (see Troubleshooting).
Commissioning is complete once the machine switch (10) has been switched back on.

Caution
The DSZ2-12V must **NEVER** be commissioned with only **one** functional vacuum circuit.

Operation

Note

- Do not store the DSZ2-12V in a damp or very cold (frost) environment. Otherwise there is no guarantee that the installed pumps will function properly.
- It is only possible to switch between suction and release with the remote control when the manual valve (suction/release valve) is on suction.

Caution

- Always ensure that the suckers are not placed on sharp edges because this could damage the sucker lips. This would lead to leaks in the suction circuit, impairing the functional safety of the device.
- Never place the machine with mounted suckers with the rubber surfaces of the suckers on sandy or similar ground. This could damage the sealing lips of the suckers. This would lead to leaks in the suction circuit, impairing the functional safety of the device. Or the grains of sand or similar substances could be pressed into the rubber surfaces, leading to damage to the upper surface of the transported goods.

Danger

- Do not allow heavy rain to fall on the DSZ2-12V.
- Do not place the DSZ2-12V in water.
- Do not convey loads over persons or machines. Cordon off the area under hanging transported goods with wide clearance.

Switching on

Set the two suction/release valves (2.1 and 2.2) to RELEASE using the remote control.

Switch on the machine with the switch (10). The pumps must start up if the vacuum is insufficient. The Pump indicator light (16) indicates that the pumps are active. If this is not the case, working with the DSZ2-12V is not permitted (see Troubleshooting). The two control lamps vacuum (14.1 and 14.2) and the signal tone (11) signalise insufficient vacuum. These signals depend on the vacuum in the vacuum reserve tanks.

If the DSZ2-12V is operated in mains operation mode, this is indicated via the network indicator light (15).

After a short time, a vacuum of at least -0.65 bar should have built up in each tank, the two vacuum control lamps (14.1 and 14.2) and the signal tone (11) go out. The vacuum pumps switch off when -0.72 bar vacuum is reached. This should be the case after a short time.

As long as no transported goods are sucked on and the stop valves (26) on the frame to the suction pads are closed, the signals are active and it is not possible to check the vacuum from the two inspection vacuum meters (3.1 and 3.2)

Working cycle

Determine the position (5) of the carrier frame using the rotation device (41) and the pivoting device (42), in which the transported goods are to be sucked on.

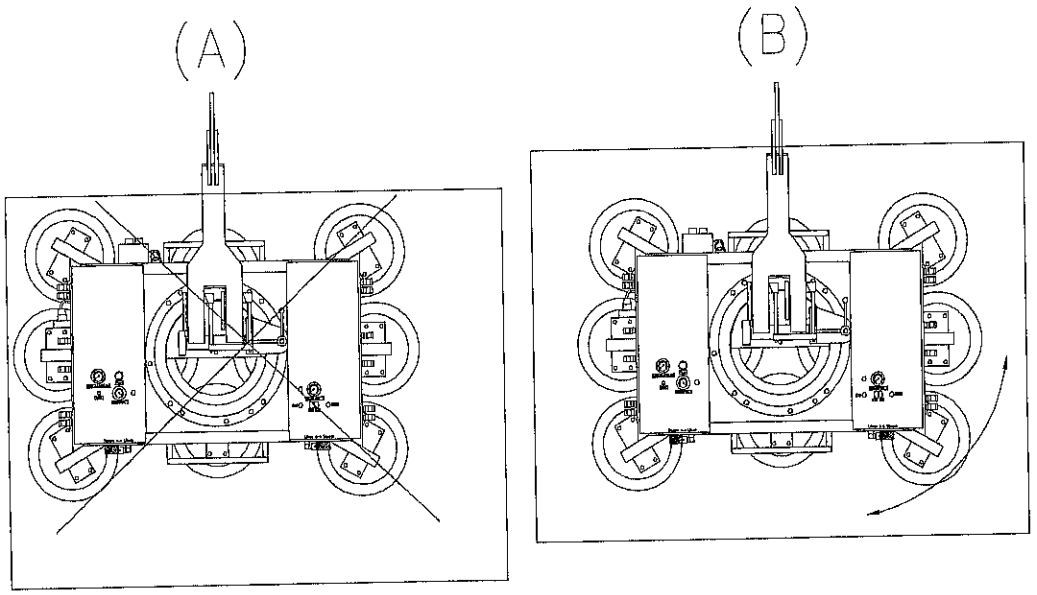
Position the DSZ2-12V on the goods to be transported

Note

- It is only possible to switch between suction and release with the remote control (8) when the manual valves (suction/release valve) are on suction.

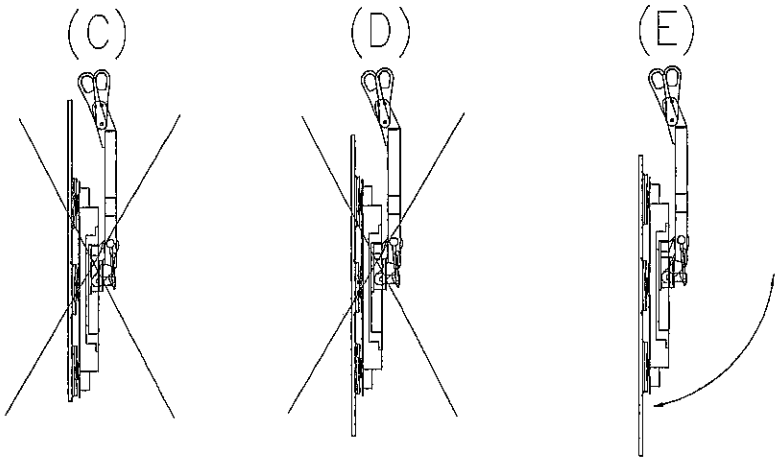
Caution

- An uneven (A) load distribution is not permitted during rotation!
- Ensure an even (B) load distribution during rotation.
- The surface must be absolutely free of dust, rust particles, water and similar



Caution

- Top-heavy (C) load distribution is not permitted during swivelling.
- Even (D) load distribution is not permitted during swivelling.
- Ensure bottom-heavy (E) load distribution during swivelling



Check that all suckers on the surface are clean and have full contact and, if necessary, press on or align a sucker that is not making contact until it is in the correct position. If this is not done, a vacuum cannot build up and the DSZ2-12V can therefore not lift the material. Set the two manual suction/release valves (2.1 and 2.2) to SUCTION.

Caution

Check the vacuum achieved using the two inspection vacuum meters (3.1 and 3.2). The two vacuum indicator lights (14.1 and 14.2 red) and the signal tone (11) indicate insufficient vacuum. The transport procedure can take place with the pumps switched off as soon as there is -0.72 bar vacuum in the vacuum circuit.

Danger

- Do not convey loads over persons or machines.

- If the vacuum sinks below -0.65 bar in both or only one of the vacuum circuits during transport work, a signal tone sounds (11). In this case, try to set down the load as soon as possible so that it does not fall down

The transported goods are guided from the side, which means that the operator stands as far as possible from the transported goods in order to guide them.

To rotate (41) or to swivel (42) the transported goods, activate the appropriate locking mechanism. When doing so, make sure that the transported goods are definitely positioned according to the drawing beforehand (B) or (E). It must also be ensured that the rotation motion can be performed without danger and that no damage occurs to the transported goods. For larger plate materials, the transported goods must be supported or held additionally.

If you want to release the transported goods, set the valves suction/release valves (2.1 and 2.2) to the RELEASE position.

The vacuum decreases and the cross arm is released from the transported goods. If the two inspection vacuum meters (3.1 and 3.2) indicate 0, the procedure is completed and the cross arm is released from the transported goods. It can occur that the DSZ2-12V remains stuck to the transported goods only to then release them, which can lead to a small shock that shakes the transported goods. Therefore hold on tightly to the transported goods during the release procedure.

Note

- If the batteries are drained, you can also use the DSZ2-12V in network mode. You only have to ensure that the cable to the network supply line is run appropriately.

Switching off

After completing transport work, switch the machine off using the switch (10) in order not to drain the battery unnecessarily.

Recharging the battery

Check the DSZ2-12V for any externally recognisable damage or flaws.

Compare the connection on the power supply network with regard to voltage, current, and mechanical connection (plug connection) with the necessary data for the vacuum pumps If they do not correspond, the machine may not be operated.

Connect the DSZ2-12V to the mains power supply at the plug (9) using an extension cable.

The recharging procedure can be checked in voltage display (13) after the Test (12) button has been pressed.

After the recharging procedure is completed, a value of 100% must be visible in the voltage display when Test button (12) is pushed

The battery is charged after a maximum of 12 hours.

Remove the extension cable from the mains power supply

This completes the charging

Troubleshooting

Pumps no longer perform correctly

The machine no longer reaches -0.72 bar vacuum.

Please check whether all suckers (7) contact the transported goods cleanly; align them if necessary.

Check the suckers and hose lines for possible damage and replace them if necessary.

Check hose clamps for firm fit and tighten them if necessary.

Leak check

Leak check for the entire system

You can perform a leak check of the two independently functioning vacuum circuits to find the leak as follows.

First of all, you should check the entire vacuum circuits with all suckers (7) and the hose lines to the two vacuum circuits. To do so, the two suction/release valves (2.1 and 2.2) should be set to SUCTION. Furthermore, it is necessary to set all suckers on a gas-impermeable, flat material (for example, a metal or glass sheet) that can be sucked up. Then the vacuum pumps are switched on and when the maximum achievable vacuum, as a rule approx. -0.72 bar in each vacuum circuit is achieved, the pumps are switched off. Read the achieved vacuum from the vacuum meters (3.1 and 3.2) and record the value in writing. The indicators of the vacuum meters (3.1 and 3.2) are only permitted to change slightly within the next fifteen minutes, not more than 5%. If the result of this test is positive, the vacuum lifting device is tight and you can work with it without risk. If a leak is detected even in one vacuum circuit, the leak must be corrected immediately or the porous material replaced.

Note

-Blue hoses = vacuum circuit 1
-Black hoses = vacuum circuit 2

Electrical malfunction

Vacuum pumps do not start when the device switch is actuated

- Vacuum supply sufficient. Device running correctly.
- Battery empty? Press button Test (12) to check voltage display. Operate device on mains supply or charge battery.
- Check safety cutout
- Have motor cables of pumps (19) checked by expert for possible cable break.
- Vacuum monitor for switching point P2 (28.1 or 28.2) defect? Replace

Vacuum pumps do not switch off when -0.72 bar vacuum is reached.

- Vacuum monitor P2 (28.1 or 28.2) defect. Replace.

No warning signals

- Vacuum above -0.65 bar? Device OK.
- Vacuum monitor P1 (27.1 or 27.2) defect? Replace.
- Signal buzzer (11) defect? Replace.

Maintenance

Note

Please note that the trades association requires an annual inspection of vacuum lifting devices by a specialist, in accordance with the accident prevent regulations (VbG 9a-prEN 13155:1998). If you do not have a suitable staff member, we offer a maintenance contract for our vacuum lifting devices which includes annual maintenance including testing and certification. Please contact us for details.

Kappel Flachglastechnik GmbH
Schlachthofstraße 3-5
D-87700 Memmingen
Phone: (+49) 8331 / 4487
Fax: (+49) 8331 / 82962

The suckers

The suckers (7) must be cleaned occasionally with a clean cloth. Please do not use a solvent (such as gasoline or similar substances). Never treat the suckers (7) with talc, lubricants, or smoothing agents, as this impairs the adhesion of the suckers, causing the transported goods to slip from them.

The vacuum lines

The hoses must be inspected occasionally for visible cracks, etc. Replace defective hoses immediately!

Note

-Blue hoses = vacuum circuit 1
-Black hoses = vacuum circuit 2

Leak check

A leak test of the two independently functioning vacuum circuits must be performed at least once a week. First you should check the entire vacuum circuit with all suckers and the hose lines.
To do this, it is necessary to set all suckers of the vacuum cross bar on a gas-impermeable, flat material (for example, a metal or glass sheet) that can be sucked up. Also set suction/release valves (2.1 and 2.2) to SUCTION. Then the vacuum pumps are switched on, and when the maximum achievable vacuum, as a rule approx. -0.72 bar in each vacuum circuit, has been achieved, the pumps are switched off. Read the vacuum obtained from the vacuum meters (3.1 and 3.2) and record the value in writing. The indicator of the vacuum meters (3.1 and 3.2) should only change slightly within the next 15 minutes, not more than 5%. If the result of this test is positive, the vacuum lifting device is tight, and you can work with it without risk.

If the test of only one of the vacuum circuits is negative, the leak must be corrected immediately or the porous material replaced.

Caution
Always check the operational safety of the pump and the other elements before starting work / commissioning.

Caution
The DSZ2-12V must **NEVER** be commissioned if only **one** of the vacuum circuits is functioning.

Technical data

Manufacturer:	Kappel Flachglastechnik GmbH
Designation:	Vacuum lifting device (battery operated)
Type:	DSZ2-12V
Serial number:	467
Year of manufacture:	2014
Operating instructions:	Art. no: KA-DSZ2-12V
Manufacturer's address:	Kappel Flachglastechnik GmbH Schlachthofstraße 3-5 D-87700 Memmingen Phone: 08331/4487 Fax: 08331/82962
After-sales service:	Phone: 08331/4487

Performance data for DSZ2-12V

Maximum size of the plate material to be transported	
Height:	approx. 2000 mm
Width:	approx. 3000 mm
Width extensions	
Height:	approx. 3210 mm
Width:	approx. 6000 mm
Frame size	
Height:	1025 mm
Width:	1490 mm
Depth:	210 mm
Temperature range	
Operating temperature	-1 to +35°C (ambient)
Storage temperature	-5 to +50°C (ambient)
Dead weight	180 kg
Vacuum storage tank	1st vacuum circuit 0.9 litre / 2nd circuit 0.9 litre
Hose connection	6 mm

Any information regarding the carrying capacity refers to even surface load. Furthermore, all suckers must have solid suction contact with the goods to be transported.

DSZ2-12V, supplied with suckers type 400 K + 150 K

Number of suckers: 6 + 6

Carrying capacity vertical: 1500 kg

Carrying capacity horizontal: 1500 kg

Suckers type 150 K

Diameter:	330 mm
Carrying capacity on smooth, clean, dry Surface with 60% vacuum	
Vertical:	150 kg
Horizontal:	150 kg
Vacuum connection:	9 mm

Six vacuum pumps

Supply voltage:	12V, DC
Nominal current:	approx. 8A

One battery

Supply voltage:	12V, DC
Nominal capacity:	approx. 18 Ah

Mains operation

Supply voltage:	220-240V, AC
Mains frequency:	50/60 Hz

Options for the DSZ2-12V

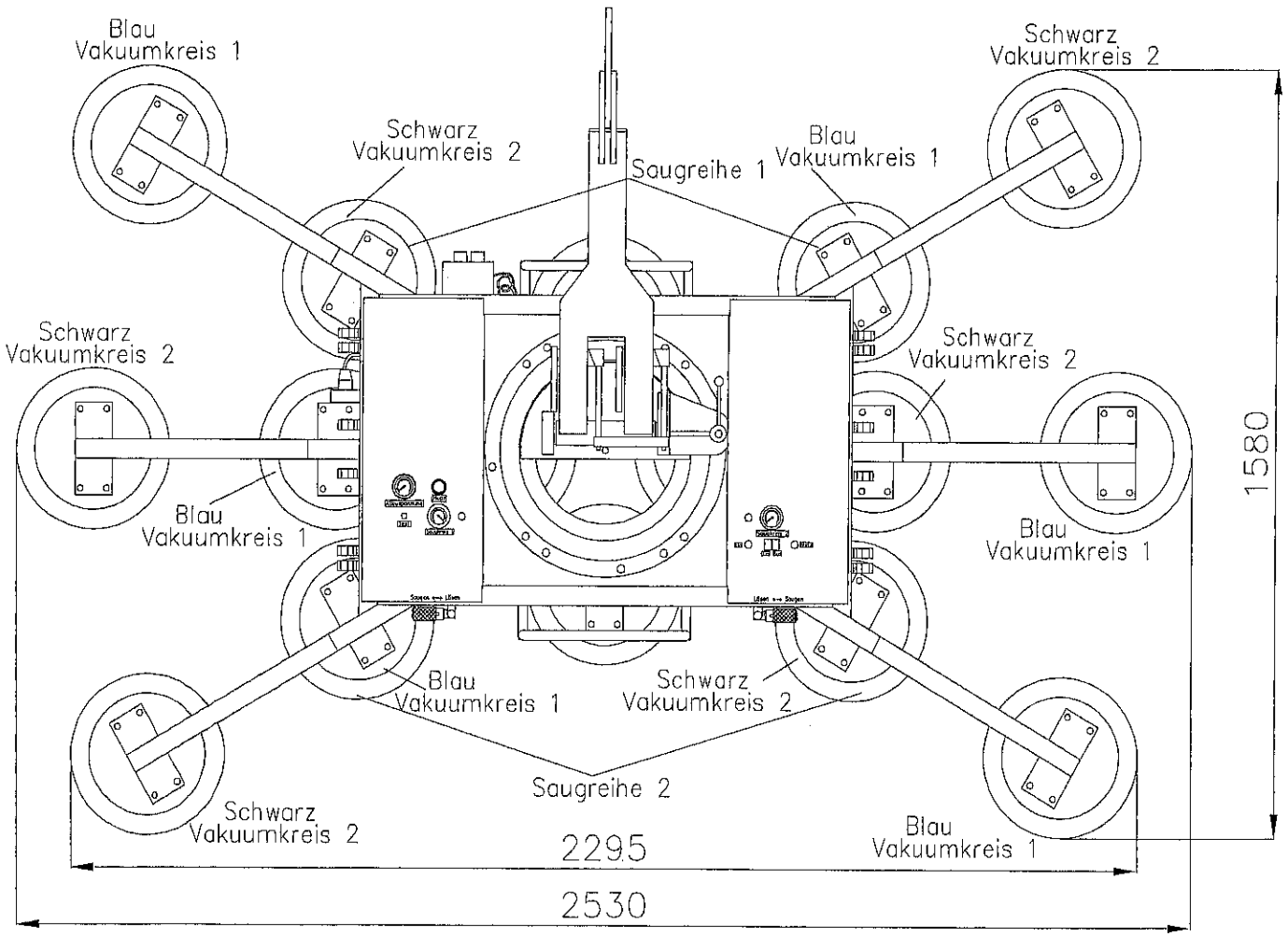
Six removable extensions with support suckers via which greater area stability in the panes is achieved when larger panes are lifted.
(three support suckers / vacuum circuit)

Attaching the extensions to the DSZ2-12V

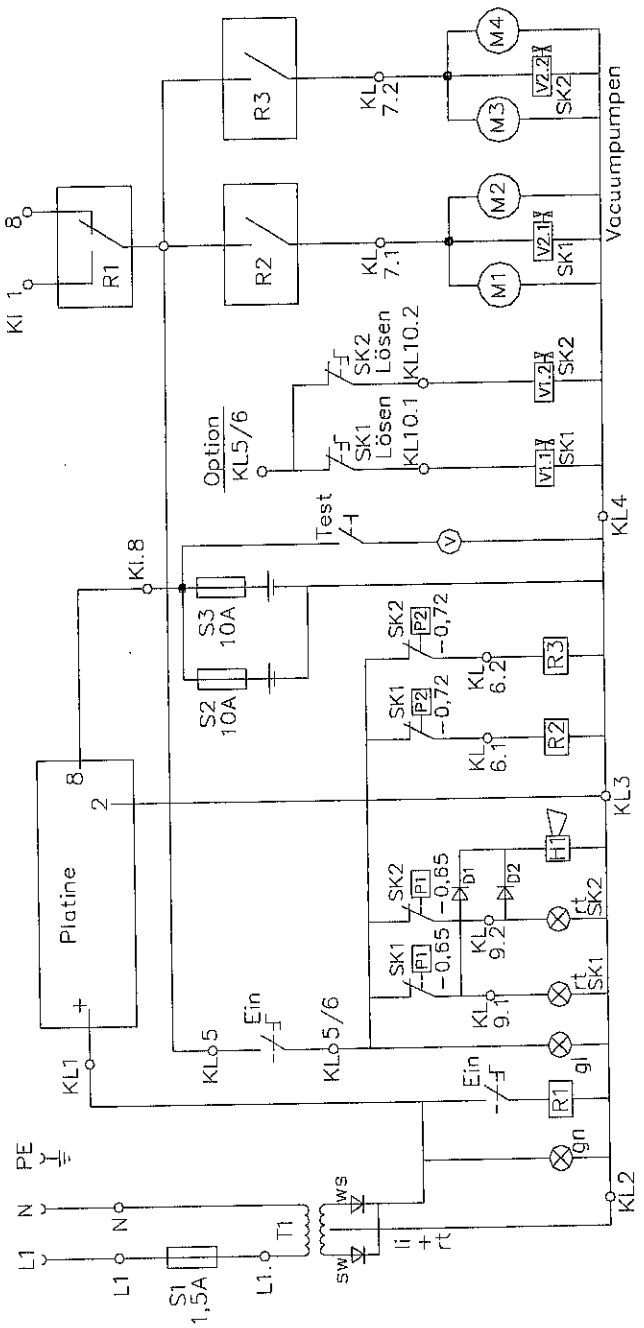
Note
-Blue hoses = vacuum circuit 1 = vacuum coupling blue
-Black hoses = vacuum circuit 2 = vacuum coupling black

Note
When attaching the extensions, attention should be paid that vacuum circuit 1 and vacuum circuit 2 are attached in each row of suckers.

The extensions should never be attached in such a way that only one vacuum circuit is connected in a row of suckers.



Wiring diagram DSZ2-12V



Spare parts list for DSZ2-12V

Position	Order no.	Quantity	Designation
1		1	Suspension eye/articulated suspension
2.1 and 2.2	MWK014	2	3/2 way slide valve, suction/release valve
3.1 and 3.2	LX98206	2	Vacuum meter 12V 63mm ¼"
4	----------	1	Casing
5	----------	1	Carrier frame
6	----------	1	Recharging device
7	150K	10	Suction pad 150 Kappel
8			
9			
10		1	Pressure switch
11	118.068.14	1	Buzzer (horn) 12V DC
12	706124	1	Test button, push-button, red
13	64590	1	Charge indicator 12 V DC
14.1 and 14.2	----------	2	LED indicator lamp 12V, red
15		1	LED indicator lamp 12V green
16	726060	1	LED indicator lamp 12V, yellow
17	----------	1	circuit breaker 15A
18			
19	0826-02	6	Vacuum pump DC 12/90S
20	----------	1	Battery 12V DC 18Ah
21			
22			
23			
24			
25	FLUID	2	3/2 way valve 1/8" 12V
26	----------	4	Mini ball valve 1/8"
27.1 and 27.2	6.256.540	2	Vacuum control, type 625 (P1)
28.1 and 28.2	6.256.540	2	Vacuum control, type 625 (P2)
29	105134	4	Cover for vacuum control
30	----------	1	3/2 magnetic valve 1/8" 12V DC Option for remote control
31	----------	1	Clamp for battery
32	HR5LA42.OPP	2	High-pressure pipe clamps Gr.5 D42 cpl. for vacuum pumps DC 12/90S
33			
34			
35			
36	Rectus 21	6	¼" vacuum S.S. couplings for extensions
37			
38			
39			
40			
41	----------	1	Rotation device
42	----------	1	Pivoting device

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Test certificate

Testing prior to initial commissioning according to Para. BGR 500 Kap. 2.8 and EN 13155
For load suspension gears and frames
of vacuum lifting units

Device type	DS2 - 12V
Serial number	467
Year of manufacture	2014
Nominal capacity kg	1500
Testing capacity kg	3000

The frame was tested according to the standards BGR 500 Kap. 2.8 and prEN 13155; 1998 (Appendix A,1 to A 1,3).
No defects were found. There are no reservations towards the practical use of the unit.

According to Kap. 3.15.2.1, BGR 500 regular inspections must be carried within year at the latest.

Memmingen, 8.12.14

Robert Kappel GmbH

Robert Kappel GmbH
Geschäftsführer
Roland Kappel
Schlachthofstr. 3-5
D-87700 Memmingen

Registergericht
Memmingen HRB 8706
Ust. ID-Nr. De129094001

Telefon 0049 (08331) 44 87
Telefax 0049 (08331) 82 96 2
E-Mail: info@vakuumlifter-kappel.de
Internet: www.vakuumlifter-kappel.de

Bankverbindungen:
Hypo Vereinsbank
Konto 365 234 221 (BLZ 731 200 75)
IBAN DE88731200750365234221
BIC HYVEDEMM

Sparkasse MM-MN-LI
Konto 380 173 500 (BLZ 731 500 00)

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CE Declaration of conformity

in terms of the CE directive

Document no.:	00012/03.98
Product name:	DS Kombi, 12V with accessories
Serial number:	467
Manufacturer:	Robert Kappel GmbH Schlachthofstr. 3/5 87700 Memmingen

Conformance of the product with the Directives No. 89/336 73/73 is given according to the following standards:

Harmonized European standards:

EN 13155	Non fixed load lifting attachments
DIN EN 292 Part 1	Safety of machinery
DIN EN 60 204 Part 1	Safety of machinery - Electrical equipment of machines

VDE 0100 Part 530 Selection and erection of electrical equipment - Switchgear and controlgear

The following standard, directives and specifications are applied:

BGR 500 Kap. 2.8 Load Suspension Gear on Crane Equipment

A complete technical documentation is available.
Operating instructions for the unit are available.

8.12.14

Memmingen,

Roland Kappel, Managing director

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Schlachthofstr. 3-5
D-87700 Memmingen

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Robert Kappel GmbH - Schlachthofstr.3-5 - D-87700 Memmingen

Sales, technical after-sale service,
repairs on tools, machines and equipment
for flat glass processing as well as
hydraulic / pneumatic
equipment and devices

Robert
KAPPEL
GmbH
87700 Memmingen

Tel. (0 83 31) 44 87
Fax (0 83 31) 8 29 62

Inspection Certificate for vacuum pumps

Customer: Wiehold		Maintenance contract no. ~~le~~	
		Type of hanger: DSt2/11	
Year of manufacture: 2011		Number of suckers: 6x 400k 6x 150k	
Type of pump / ~~inflow take~~ nozzle: DYNAFLO 2x		No. 467	Year of manufacture: 2014
OPTICAL CHECK			
	Good condition	Has been renewed	Must be renewed
Suction pads	x		
Hanger hoses	x		
Vacuum tank	x		
Hose recoilers			
Clamps	x		
FUNCTIONAL TEST			
	OK		
Vacuum capacity / inflow ~~take nozzle~~ / pump	yes x	no	
Installation position hose recoiler	yes	no	
Switching function vacuum control 0,65 bar	yes x	no	
Hand valve functioning (incl. SS coupling)	yes x	no	
Establishing of vacuum (at least 0.65 bar) 0,7 bar	yes x	no	
Leak tightness (vacuum equipment)	yes x	no	
Leak tightness (vacuum tank)	yes x	no	
ACCEPTANCE TEST			
Equipment has been accepted correctly	yes x	no	
Re-examination necessary after remedy of defects	yes	no x	
Equipment is ready for operation	yes x	no	
Remarks: Neu !			

Scope of test fulfilled in accordance with BGR 500
Kap. 2.8 by specialist

Robert Kappel GmbH
Memmingen

Next acceptance test 12 month 2015 year

Memmingen, 08.12.2014 [signature]

Place, Date, Signature

Daily Pre-Use Checklist
Vacuum Lifter

Northern (Head Office) **Tel: +44 (0)1482 227333**
Central Tel: +44 (0)1302 341659
Western Tel: +44 (0)1384 900388
Southern Tel: +44 (0)203 174 0658
www.hird.co.uk

Machine Model: **Kappel DSZ3 Slimline**		Site Name:
Date Week Commencing:	Fleet No:	Address:
Inspected by:		

	Daily Pre-use Checks	M	T	W	T	F	S	S	COMMENTS
1	Are all operators manuals present and readable								
2	Is the Report of Thorough Examination (LOLER) in date								
3	Complete a visual walk around / Inspection for any noticeable defects								
4	Are all safety information decals present and readable								

Check the following components or areas for damage, or missing parts & unauthorised modifications:

5	Is the lifting attachment free from defects and safe to use								
6	Vacuum pads for rips, tears, quality and cleanliness								
7	Vacuum pipes and connections (in particular quick release fittings)								
8	All extension arms are present and free from defects (where applicable)								
9	Make sure all individual pad shut off valves are open (where applicable)								
10	Electrical components, wiring, connectors,								
11	Check input mains voltage corresponds with charger voltage (110v or 240v)								
12	Charger								
13	Check battery has sufficient charge								
14	Are rotation and tilting movements functional								
15	Check handles security								
16	Check remote for any damage or defects (where applicable)								
17	Check operation buttons / switches are working and free from defects								
18	Energise vacuum on non porus surface								
19	Are lights and audible alarms on during vacuum process								
20	Does the vacuum reach sufficient level, before switching off (see gauges)								
21	Does battery gauge illuminate when pump switches off **If NO - DO NOT USE**								
22	Check Safe Working load of vacuum - is it suitable for the proposed load								
23	Carry out full function test								

Is the machine safe to use? (please circle)	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	
Operator's Initials								

Result of Inspections: List defects or state "No Defects"

Signature:	**Name:**	**Date:**