HIRD GLASS

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OPERATOR MANUAL

KAPPEL

HYDRAULICA 1200 CURVED

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KAPPEL **HYDRAULICA 1200 CURVED**

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Foreword

These operating instructions are intended to help you become familiar with the mounting kit and to use it as intended.

They contain important information on the safe, proper and efficient operation of the mounting kit. Observing them helps to prevent repair costs and downtime and to increase the reliability and service life of the device.

These operating instructions must be supplemented by additional provisions based on existing national regulations on accident prevention.

The operating instructions must always be available at the usage location of the mounting kit.

They must be read and observed by anyone assigned to work with or on the mounting kit, e. g.

- Operation, including tooling, elimination of faults in the work process, removal of production waste, care
- Maintenance (servicing, inspection, repair) and/or
- Transport

In addition to the operating instructions and binding national and local accident prevention regulations, the generally recognized technical rules for safe and proper operation are also to be observed.

If you find any errors when reading these operating instructions or if you have further comments or suggestions to make, please contact:

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Schlachthofstraße 3-5
87700 Memmingen
Germany
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Telefax: +49 (0)8331/82962
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Internet: www.vakuumlifter-kappel.de

The management appreciates your cooperation.

Technical Description

The mounting kit for curved glass consists of two or more support tubes on which the suction cups can be moved and set at an angle.

The number of suction cups depends on the size and weight of the payload.

The mounting kit can be mounted on different vacuum lifters and

suction frame.

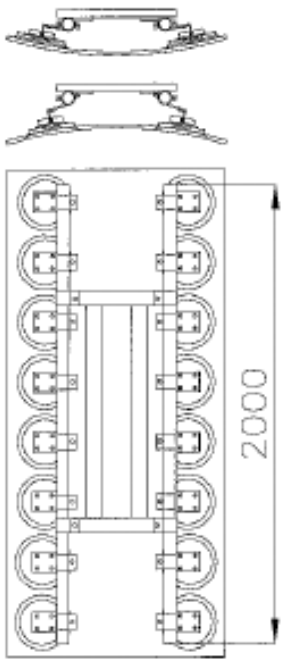
The mounting kit can be used to lift convex and concave curved glass. The smallest possible inner and outer radius of the suction cups that can be sucked is 450mm.

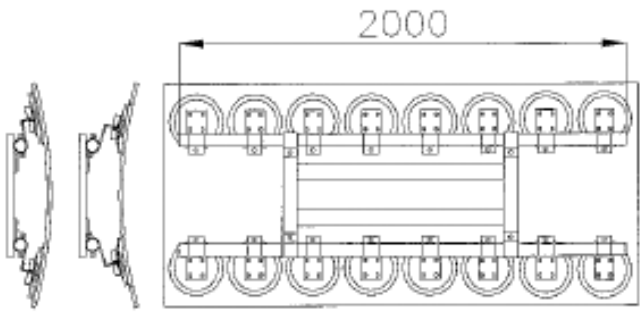
The individual suction cups can be locked by vacuum couplings.

CAUTION

Keep in mind the maximum load capacity of the vacuum lifter.

The support pipes must always be parallel to the straight axle of the transported material.





Basic Safety Instructions

Warnings and symbols

The operating instructions use the following terms and symbols for particularly important information:

Note	Specific information on the efficient use of the machine
Caution	Special information or requirements and prohibitions for the prevention of damage.
Hazard	Information on requirements and prohibitions to prevent personal injuries and substantial property damage.

Intended use

The mounting kit has been designed in accordance with state of the art and recognized safety rules. Nevertheless, its use may give rise to physical hazards to the operator or third parties, or to damage of the equipment or other property.

Do not use the device unless it is in good working order and operate as intended. Always ensure that all safety aspects and hazards are duly considered and the operating instructions are observed! Any defect or malfunction must be promptly eliminated, especially if they can affect safety!

The mounting kit is exclusively designed to transport gas-tight, dry materials with firm and smooth surfaces. Any other use or use going beyond this, such as transporting gas-permeable, foil-laminated or wet materials, as well as rotating or swivelling large or excessively heavy items is deemed as not intended. The manufacturer/supplier cannot be held liable for any damage resulting from such use. The risk is borne solely by the user.

Running the equipment in a manner consistent with its intended use also means that the operating instructions are duly observed and the inspection and maintenance requirements are met.

Organisational Measures

Always keep the operating instructions within reach at the operation site of the machine!

In addition to these operating instructions, generally applicable statutory and other binding regulations for accident prevention must be observed!

Such obligations can also concern e.g. the provision/wearing of personal protective equipment.

Supplementing the operating manual with instructions including monitoring and reporting obligations to take account of operational features, e.g. as regards the organisation of work, work processes, staff used.

Any person working with or on the equipment must have read the operating instructions prior to commencing work, especially the chapter on safety instructions. Doing this during operation would be too late. This particularly applies to the staff working on the device only occasionally, e.g. when setting up, maintaining.

Check, at least occasionally, whether the staff are aware of safety and danger taking into account these operating instructions!

If necessary or required by regulations, wear personal protective equipment! When transporting glass, always use appropriate protection equipment (safety shoes, protective gloves, wrist protectors, safety helmets, etc.). Always wear a helmet when transporting items above head height.

Comply with all safety instructions and hazard warnings on the device!

Keep all safety and danger signs on the device in a legible state!

In case of safety-relevant changes concerning the machine or its operating behaviour, stop the machine immediately and report the malfunction to the responsible office or person!

Any alterations, additions and modifications to the machine which could impair safety require prior approval from the supplier! This also applies to the installation and adjustment of safety devices and safety valves and to welding work on load-bearing parts.

Replacement parts must meet the technical requirements specified by the manufacturer. This is always guaranteed with original spare parts.

Replace vacuum hose connections at the specified or appropriate time intervals, even if there are no recognizable safety-relevant defects!

Comply with the prescribed deadlines for recurring tests/inspections and with those specified in the operating instructions!

To carry out maintenance work an appropriate workshop is imperative.

Selection and qualification of personnel

Work on or with the machine may only be performed by reliable personnel. Observe the minimum working age required by law!

Use only trained or instructed personnel. Clearly define personnel responsibilities as to operation, setting up, maintenance and repair!

Make sure only authorized personnel work on the machine!

Specify a person responsible for operating the machine and allow him to refuse to comply with instructions from third parties which go against the safety instructions!

Personnel to be trained, taught, instructed or undergoing general training must be allowed to work on the machine only under constant supervision of an experienced person!

Work on electrical components of the machine must only be carried out by an electrical specialist or by persons who have received instruction under direction and supervision of an electrical specialist in accordance with the rules of electrical work.

Safety instructions for 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 to the work and traffic area, the load carrying capacity of the floor and necessary cordoning off of the worksite from the public traffic areas.

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

Check the machine for externally recognizable damage 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!

In case of malfunctions immediately stop the machine and secure it! Correct malfunctions without delay!

Comply with switch-on and switch-off procedures and monitor the control displays in accordance with the operating instructions!

Always stop working in case of darkness or poor visibility!

Special work

Follow the set-up, maintenance and inspection routines and intervals specified in the operating instructions, including the instructions for replacement of components and parts of equipment. Such work must be performed by skilled professionals only.

Maintenance and repair work can only be carried out when the machine is on level and stable surface, secured against rolling and buckling!

Clean the machine, in particular the connections and screw joints, before beginning maintenance/ repair work! Do not use aggressive cleaning agents.

Use lint-free cleaning cloths!

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

After cleaning, inspect all vacuum lines for leaks, loose connections, chafe marks and damage! Fix any defects immediately!

Tighten loosened screw connections when completing maintenance and repair works.

Instructions on special dangers

Electrical energy

Use only genuine fuses with the specified amperage! Switch off the machine at once in the event of faults in power supply!

Work on electrical equipment or components must only be carried out by an electrical specialist or by persons who have received instruction under direction and supervision of an electrical specialist in accordance with the rules for electrical work.

Where specified, safely disconnect power supply to any equipment components on which inspection, maintenance or repair work is to be carried out. First check the isolated components for absence of voltage, then earth and short them and insulate any live parts in the vicinity!

Inspect/check the electrical equipment of the machine regularly. Remedy defects like loose connections or charred cables at once.

Oils, greases and other chemical substance

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

Commissioning

Note

- The vacuum lifter shall not be stored in a damp and/or very cold (frosty) environment, otherwise proper function of the installed pumps cannot be guaranteed.

Caution

- Always ensure that the suction cups are not placed on sharp edges, as this could damage the suction lips. This would lead to leaks in the suction circuit and thus impair the functional safety of the machine.

- Never place the rubber surfaces of the machine's suction cups on sandy or similar soils. This could damage the sealing lips of the suction cups. This would lead to leaks in the suction circuit and thus impair the functional safety of the machine. Grains of sand and similar substances could also be pressed into the rubber surfaces and damage the surface of the transported material.

Hazard

- Do not expose the vacuum lifter to heavy precipitation.

- Do not place the vacuum lifter into or in water.

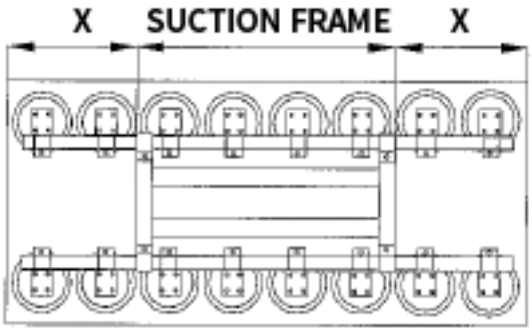
- Do not convey loads above persons or machines. Block off the area under hanging transported material with wide clearance.

Installing support pipes and connecting suction cups

The support pipes with suction cups on the support tube brackets on the suction mount frame or vacuum lifter.

CAUTION

The pipes must be installed centrally to the suction frame/vacuum lifter.



The number of the support pipe brackets depends on the glass geometry, load capacity and the type of suction frame or vacuum lifter.

All existing support pipe brackets must always be installed.

The vacuum connection for the suction cups is made using quick release couplings.

Connecting suction cups

The suction cups must always be equally distributed over the suction circuits in order to ensure an even load distribution in the event of failure of a vacuum circuit.

Connection example in dual-circuit system		**Connection example in four-circuit system**	
For 12 suction cups	6 pcs / vacuum circuit	For 12 suction cups	3 pcs / vacuum circuit
For 20 suction cups	10 pcs / vacuum circuit	For 20 suction cups	5 pcs / vacuum circuit

CAUTION

- Blue hose pipes	Vacuum circuit 1	Vacuum couplings Blue
- Black hose pipes	Vacuum circuit 2	Vacuum couplings Black
- Yellow hose pipes	Vacuum circuit 3	Vacuum couplings Yellow
- Red hose pipes	Vacuum circuit 4	Vacuum couplings Red

CAUTION

The mounting kit must only be used with all existing vacuum circuits.

Arrangement of suction circuits on the transported material

The suction circuits must always be evenly distributed on the transported material. See Fig. 1 and 2

CAUTION

- Blue hose pipes	Vacuum circuit 1	Vacuum couplings Blue
- Black hose pipes	Vacuum circuit 2	Vacuum couplings Black
- Yellow hose pipes	Vacuum circuit 3	Vacuum couplings Yellow
- Red hose pipes	Vacuum circuit 4	Vacuum couplings Red

Fig. 1 Dual-circuit system

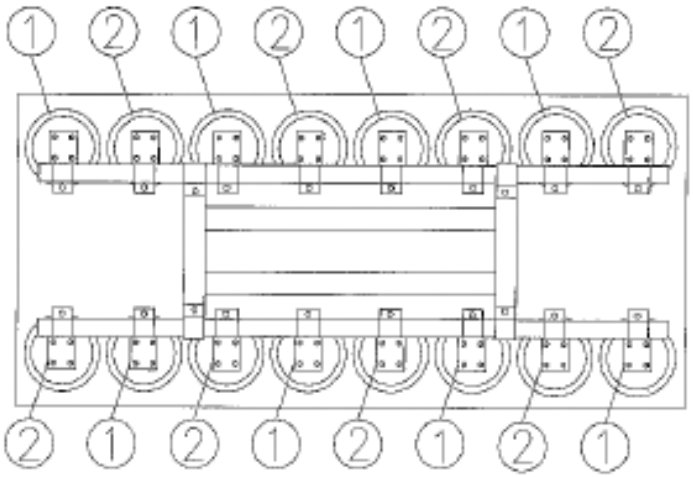
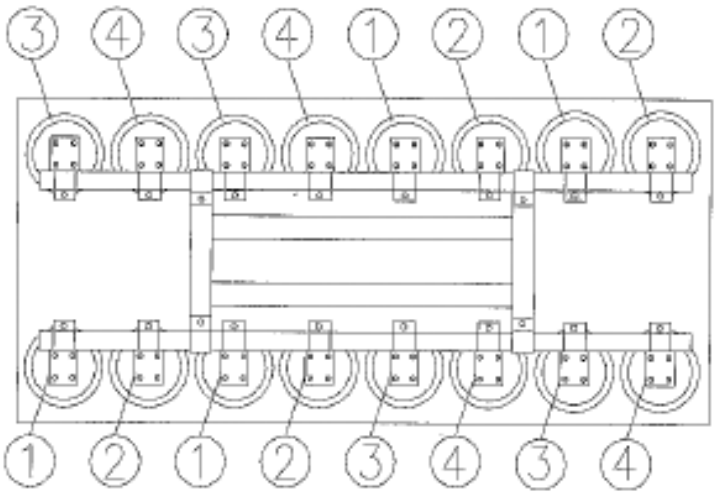


Fig. 2 Four-circuit system



Setting suction cups on the transported material

The suction cup 540KS can be used to suck in the conveyed material with a smallest possible radius of 450mm inside and outside. Since there is a variety of options for internal and external radii, the suction cup must always be exactly adapted to the conveyed material.

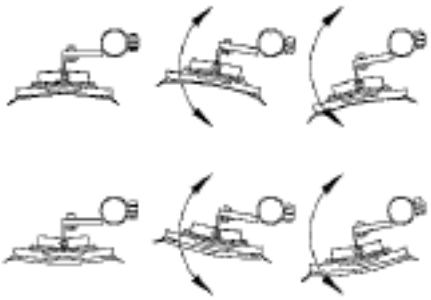
For this, the suction cup bracket has to be placed into position by turning on the support pipe (Fig. 3) so that the suction cup can neatly and with the whole surface adhere to the glass.

Once this is done, the suction cup brackets must be screwed to the support pipe.

CAUTION

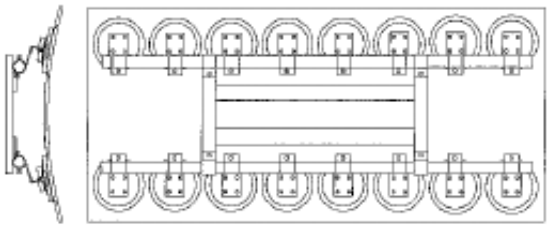
The support pipe brackets on the suction frame or vacuum lifter must be securely tightened to prevent the support pipe from turning during transport.

Fig.3

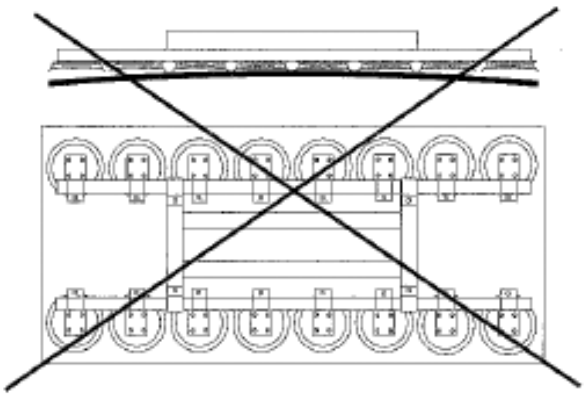


CAUTION

The support pipes must always be parallel to the straight axis of the transported material.



The support pipes must never be in the axis of the curved pane



Operation

Note

- The vacuum lifter shall not be stored in damp and/or very cold (frosty) environment, otherwise proper function of the installed pumps cannot be guaranteed.

Caution

- It is essential to ensure that the suction cups are not placed on sharp edges because this can damage the suction lips. A consequence would be a leak in the suction circuit, which would affect the functional safety of the device.

- Never place the rubber surfaces of the machine's suction cups on sandy or similar soils. This could damage the sealing lips of the suction cups. This would lead to leaks in the suction circuit and thus impair the functional safety of the machine. Grains of sand and similar substances could also be pressed into the rubber surfaces and damage the surface of the transported material.

Hazard

- Do not expose the vacuum lifter to heavy precipitation.

- Do not place the vacuum lifter in or into water.

- Do not convey loads above persons or machines. Block off the area under hanging transported material with wide clearance.

Work Cycle

CAUTION

Before the transport work make sure the operating instructions of the vacuum lifter are observed.

The surface must always be free from dust, flash rust, water or similar substances.

If the conveyed material or suction cups need to be cleaned, please use

a degreaser which evaporates without residue, such as Nitro or brake cleaner.

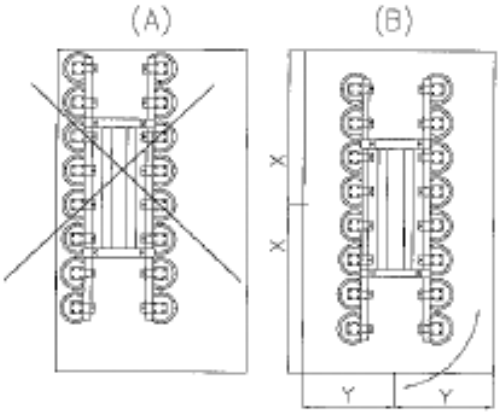
The suction cups must not be covered with protective covers when conveyed material is sucked in.

To set suction cups to the conveyed material see (page 3-4)

Determine location of the support frame, in which the conveyed material can be sucked in using the rotary or swivel device on the vacuum lifter.

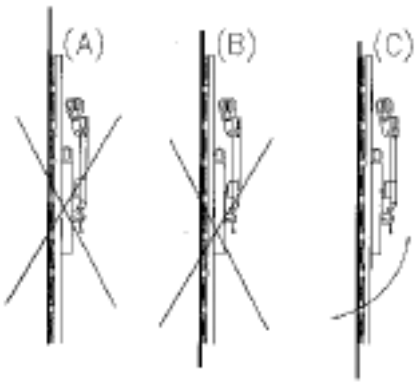
CAUTION

- An uneven (A) load distribution is not permitted during rotation!
- Ensure an even (B) load distribution during rotation.



CAUTION

- A top-heavy (C) load distribution is not permitted during swivelling!
- A bottom-heavy (D) load distribution is not permitted during swivelling!
- Ensure a close to the ground (E) load distribution during swivelling.



Make sure all suction cups on the surface are clean and are in full contact, and if necessary press or align a suction cup that has no contact until it is in the correct position. If this is not done, vacuum cannot be produced and the vacuum lifter will therefore not raise the material.

For the transport make sure the operating instructions of the vacuum lifter are observed.

CAUTION

The individual suction cups must be connected through the vacuum couplings with the vacuum tanks, see page 3-2.

Hazard

- Do not convey loads above persons or machines.
- If the vacuum sinks below -0.65 bar in both or one of the vacuum circuits during transport, a signal tone sounds. In this case, try to set down the load as soon as possible so that it does not fall down.

The conveyed material is guided from the side, this means that the operator stands as far as possible from the conveyed material to guide it.

The appropriate locking device is activated to turn or swivel the conveyed material. For that, the conveyed material must be positioned according to the drawings (B) or (E). It must also be ensured that the rotation or swivelling motion can be performed without danger and that no damage occurs to the transported material. In the case of larger plates the conveyed material must also be picked up and retained.

To release the conveyed material observe the operating instructions of the vacuum lifter.

Checking for leaks

Leak check of the entire system

To check the vacuum circuits for leaks, refer to the operating instructions of the vacuum lifter.

Maintenance

Note

Please note that the trade association requires an annual inspection of vacuum lifting devices by a specialist in accordance with accident prevention regulations (VbG 9a-prEN 13155:1998).

If you do not have a suitable person, we offer a maintenance contract for our vacuum lifting devices, which includes annual maintenance plus testing and certification. Please contact us for details.

Kappel Flachglastechnik GmbH

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Internet: www.vakuumlifter-kappel.de

The Suction Cups

The suction cups must from time to time be cleaned with a degreaser which evaporates without residue, such as Nitro or brake cleaner.

Please do not use solvents (such as gasoline or similar substances). Never treat the suction cups with talc, lubricants or smoothing agents as these impair the adhesion of the suction cups, 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!

Checking for Leaks

In at least weekly intervals the vacuum circuits must be checked for leaks. Check the entire vacuum circuit with all suction cups and hose lines.

To check the vacuum circuits for leaks, refer to the operating instructions of the vacuum lifter.

Technical data

Manufacturer:	Kappel Flachglastechnik GmbH
Designation:	Mounting kit for curved glass
Type:	ASGS
Serial number:	*See vacuum lifter for serial number*
Year of manufacture:	2016
Operating instruction:	**Item No.:** ASGS-4.8.16
Manufacturer's address:	Kappel Flachglastechnik GmbH Schlachthofstraße 3-5 87700 Memmingen, Germany Germany
Phone:	+49 (0)8331/4487
Telefax:	+49 (0) 8331/82962
e-mail:	info@vakuumlifter-kappel.de
Internet:	www.vakuumlifter-kappel.de

Temperature range

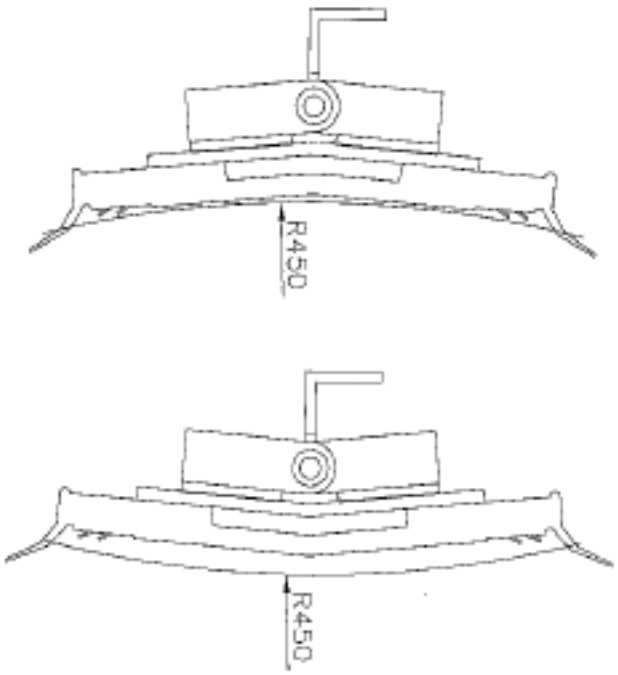
Operating temperature +1 to +40 degrees Celsius (environment)

Storage temperature Room temperature not below 0 degrees

Dead weight 176

The smallest possible inner and outer radius

The smallest possible inner and outer radius of the suction cups 540KS that can be sucked is 450 mm.



Spare parts list for ASGS

Item	Designation
1	Suction cups 540 KS
2	Hinge bracket
3	Pipe bracket for suction cups
4	Pipe bracket for suction frame

Daily Pre-Use Checklist
Vacuum Lifter

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Machine Model: **Kappel Hydraulica 1200 Curved**		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:**