HIRD GLASS

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OPERATOR MANUAL

KAPPEL

Hydraulica 1200

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DSH2 VARIANTS HYDRAULICA VACUUM LIFTER
OPERATING AND MAINTENANCE MANUAL

TECHNICAL DESCRIPTION

The dual circuit Hydraulica multi-purpose vacuum lifter is capable of lifting non-porous loads of up to 1000kgs (DSH2) or larger area loads of up to 1200kgs (DSH2-1200). It features 270° manual rotation and hydraulic power tilt from 0 to 90°. Power rotation is available as an optional extra.

It is a dual power machine which can be powered by the on board maintenance free 12V dry cell rechargeable battery or by 110V supply. The built in charger allows the operator to recharge the battery during mains operation or overnight before1_ifting-commences.

Safe operation is assured by four independent systems :

Two independent vacuum systems , each with its own vacuum pumps (2 per circuit), non- return valve, vacuum sensor , vacuum gauge and alarm system . This ensures that should one circuit loose vacuum due to breakage , etc. the other circuit will still support the load. Either circuit is capable of supporting the safe working load (SWL). During thorough examination both circuits are independently proof tested to 1.5 times the SWL.

N.B. This does not imply that the lifter can be used to lift greater than the SWL At no time must a load greater than the SWL be lifted.

If electrical power is lost during mains operation the battery will automatically take over to power the lifter in all its functions; The two vacuum tanks offer a vacuum reserve which will still hold the load if there is a pump malfunction . The vacuum is held in the tanks by non-return valves, one for each circuit, which limits the ingress of air to the system; The pumps are controlled by vacuum sensors which automatically start the pumps and regenerates the vacuum if a low vacuum condition (below 61 %) is reached on either circuit. This is accompanied by audible and visual warnings.

Pump application is reduced by a combination of the vacuum reserve tanks and vacuum sensors, which switch off the pump when the vacuum reaches approximately 74% and only restarts when the 61% unsafe limit is reached. This limits the drain on the battery.

The individual pads are movable on the pad frame to cater for different sized or odd shaped loads. Shut off valves allow individual pads to be isolated should they not be required.

N.B. Although it Is possible to apply the vacuum circuits Individually the lifter MUST NEVER be operated in this manner. Both vacuum circuits must be functioning correctly and MUST ALWAYS be operated before attempting to lift the load. Failure to do so could lead to loss of the load with potentially fatal consequences.

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HEALTH AND"SAFETY INSTRUCTIONS

General

1. The DSH2 Hydraulica variants are-designed in accordance with the relevant European standard (EN13155:2003). However, operating errors and misuse will result in hazards;

a - to the life of the operator and others;

b - to the lifter and materials of the company and others;

c - to the correct and·efficient operation of the device

2. All persons involved with the set-up, operation and maintenance of the machine must read and observe the following instructions . The personal safety of yourselves and others that may encroach upon your operation is at stake.

3. Only operate the DSH2 Hydraulica under the correct environmental conditions, to do otherwise jeopardises health and safety, and will invalidate the Report of Thorough Examination and any warranties still in force.

N.B. The DSH2 Hydraulica variants are multi-configuration lifters. Always check the Report of Thorough Examination to ensure the Safe Working Load (SWL) of the lifters current configuration is adequate for the load to be lifted.

Intended Use

4. The DSH2 Hydraulica variants are intended for the carriage of gaslight , dry materials with a solid, smooth surface . The load may be manually rotated through 270° and hydraulically tilted from 0 to 90°·. Use of additional and sufficient manpower is strongly recommended when performing the rotation manoeuvre . Other operations involving the lifting of gas permeable or foil coated materials, wet or unstable loads, loads that are heavier than the SWL or operating outside the environmental guidelines or using the machine in the rain is regarded as contrary to intended use. The manufacturer/ supplier is not liable for any damage resulting from such misuse. That risk lies entirely with the user.

5. Care is to be taken when operating this machine in areas of high electromagnetic disturbance, e.g. HV power generation facilities, HV transformer sub-stations , as this may lead to the inadvertent release of materials. Where this work is carried out every opportunity must be taken to isolate equipment from HV interference by ensuring all covers to distribution boxes, control boxes, etc. are closed.

6. Unauthorised alteration to the structure or operational controls of the device is prohibited for safety reasons.

7. Intended use also requires observance of the operating manual and adherence to the conditions for inspection and maintenance .

Emissions

8. The equivalent continuous A-weighted sound pressure level (LpA) approximately 80dbA at a distance of one meter whilst the pump and warning siren are operating a This is below the first action level as defined in the Control of Noise at Work Regulations 2005. However in confined areas this level may be exceeded and personnel may suffer hearing disturbance and should be issued with the appropriate personal protective equipment.

Environmental Considerations

9. The lifter must not be used in the rain or ·on wet loads. Failure to observe this requirement may lead to failure of the safety systems with potentially fatal consequences.

10. The operating temperature range is 0°C to +35°C. The storage temperature range is -5 °C to +50°

Sources of Hazard

11. The lifting frame works on negative pressure (vacuum) to hold the gaslight load. Any failure of the vacuum system may cause the load to be released with potentially fatal consequences. Therefore, as far as is reasonably practicable, all measures must be taken to avoid lifting the load over personnel.

Organisational Measures

12. A job specific risk assessment and method statement must be prepared by a competent person prior to the commencement of the task.

13. Always have the Hydraulica operating manual available on site.

14. No one under the age of 18 years old may operate this machinery.

Maintenance

15. User maintenance of the device is strictly limited to:

- **a.** pre-use inspection;
- **b.** battery charging**;**
- **c.** resetting of 2A and 25A circuit breakers .

16. Other than these operations all maintenance , inspection and testing must be carried out by authorised and competent personnel only.

17. Never clean the pads with solvent based chemicals, this will remove the plasticiser and seriously degrade the pads shortening their life and rendering them unsafe. In the event of serious contamination of the pads, a mild solution of soapy water should be used . Care should be taken that no water enters the system during cleaning via the holes on the pads.

18. As a designated "accessory for lifting" the DSH2 Hydraulica variants are subject to a thorough examination by a competent person every 6 months in accordance with the Lifting Operations and Lifting Equipment Regulation 1998, Regulation 9(3)(a)(i) .

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LIMITED WARRANTY AND LIABILITIES

1 In principle, dependent upon type of supply our Hire Terms and Conditions or 'Sales Terms and Conditions' are valid and apply.

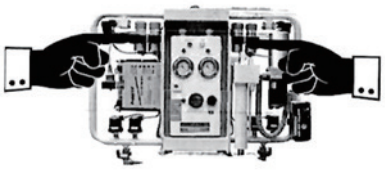
2 Warranties and liability claims for injury to persons or material damaged are limited to where it can be proven that aforesaid injury or damage is due to negligence on the part of Hird Ltd or their authorised representative.

3 In particular the following conditions are strictly excluded from warranty or liability claims:

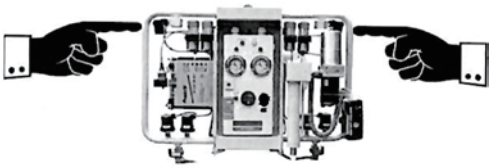
- **a** - device being used for lifting of materials other than those covered by the intended use section of the health and safety instructions ;
- **b** - improper mounting, installation , operation or maintenance of the device;
- **c** - use of the device with safety or protective devices that are not operating correctly;
- **d** - device being transported, operated, mounted, installed , maintained or prepared in contradiction of the advice as described in the health and safety instructions;
- **e** - unauthorised modification or alteration to the device ;
- **f** - use of the device by personnel with inadequate knowledge of the operation of vacuum devices ;
- **g** - improper repair;
- **h** - natural catastrophe or force majeure.

SAFETY DEVICES

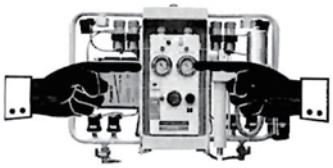
The DSH2 Hydraulica variants have several safety devices to prevent the loss of vacuum.



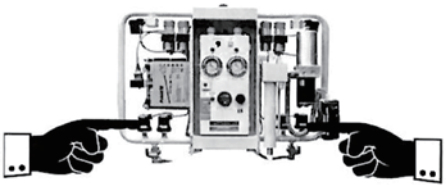
1 The non-return valves in the vacuum pumps prevents loss of vacuum when the pump shuts of or ails.



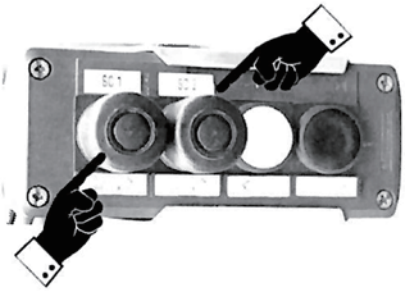
2. The vacuum tanks create a vacuum reserve to hold the load in the event of a vacuum pump failure . It also prevents the pump switching on too often during normal operation, helping to preserve battery



3. Vacuum gauges give a direct indication of the percentage of vacuum in both circuits .



4. Vacuum sensors with in-line warning light and siren to indicate when vacuum has dropped to unsafe level in either circuit.



5. The remote control has a ‘press to apply and lock - pull to release’ control knob for each circuit to prevent the inadvertent release of vacuum .

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TRANSPORTATION & STORAGE

1. Do not set down the suctions cups, nor try to apply them on a surface that is likely to damage the sealing lips,·such as; rough stone or concrete, sharp edges. The-resulting damage to the lips could impair the cups ability to seal when required and may lead to the loss of the load).

2. Likewise, never place the cups down on a dusty or sandy area or one that is covered with grit. This may lead to sharp grains becoming embedded in the pads. This may lead to the pad not sealing correctly or damage to the surface ·being lifted.

3. Never lean the lifter against a surface for storage as the lips may become distorted or the lifter may be knocked over and damaged. If it is necessary to lean the machine against a surface always ensure the pads are supported clear of the floor and the lifter is adequately secured against falling.

4. The lifter should always be transported and stored either on a smooth clean surface or by being freely suspended .

5. Always ensure that the lifter is stored away from areas that are subject to rain, snow or heavy condensation as the moisture may penetrate the electrical or vacuum system causing severe damage and creating an electric shock risk and/or impairment of the vacuum system.

6. Temperatures of -5°C should be avoided for storage as this may cause premature perishing of the pads and render them unsafe and unusable.

7. Preferably the lifter should be stored on its own stand or transport frame in a warm, dry atmosphere .

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OPERATION

CHARGING THE BATTERY

1. Ensure that the mains supply voltage corresponds with the charger voltage i.e. 110 volts.
2. Unwind the supply cable and any extension leads fully.
3. Plug the lead receptacle onto the plug fitted on the lifter prior to inserting any other plugs. Failure to do so may cause the 2A switch S1 to trip,
4. Once the lead is firmly secured to the lifter , the other end may be plugged into the mains or transformer.
5. The green POWER light should now illuminate and the battery will begin to charge . Charging is fully automatic and will take approximately 8 hours.
6. To check the amount of charge in the battery, press the Battery Test button and the gauge will illuminate and indicate the percentage of charge.

N.B. Never attempt to lift if the battery charge is indicating below 20%

7. If the Power light fails to illuminate , check the 2A trip S1 and reset if required

PRE-USE INSPECTION

Prior to starting any operations, the Provision and Use of Work Equipment Regulations 1998 states that the lifter must be inspected. You will find the Pre Use Inspection Check List at the end of the Operating Manual.

1. Check the lifter for damage and distortion , particularly in the area of the vacuum tanks and any welds.
2. Check the vacuum pads for rips or tears that may affect the vacuum lips. Check also for perishing or evidence of hardening , and for cleanliness of the pads

3. Check the vacuum pipes for any damage and security. Where extension arms are fitted pay particular attention to the security of the quick release fittings. See **Safety Note 1 on page 10**
4. Check the electrical cabling for any damage. Inspect the battery connections for security.
5. Check battery has sufficient charge. Where the lifter

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OPERATION

6. Check the test plate of the lifter for:

a. Safe Working Load (SWL), this will always show the maximum SWL. The current Report of Thorough Examination must be consulted to confirm the SWL in the configuration being used.

b. Serial number of the lifter, and that it matches the serial number on the accompanying Report for Thorough Examination.

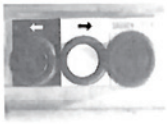
c. The last examination date matches that on the Report of Thorough Examination and that the current date is within 6 months of the last Thorough Examination.

7. Ensure all pad shut off valves are in the 'OFF' position, i.e. not in line with the pipe. Press both vacuum activation buttons on the remote control and turn the power switch to 'ON'

8. Ensure that all warning lights and sirens are on during vacuum build up.

9. Ensure vacuum reaches correct level on both circuits before pump turns off.

10. Using the remote control buttons, check that the lifter tilts from O to 90° and back again freely.



11. Holding the rotation release handle ensure that the lifter turns 270° freely. Repeat this operation, this time checking that it will lock every 90°.

12. Turn the power switch to 'OFF' and pull both the vacuum actuation valves to release the vacuum and ensure the vacuum gauges drop to 0.

13. Ensure all pad isolation valves are turned on, i.e. in line with the pipes

14. Apply the lifter to a glass unit, turn the power 'ON', press both the vacuum application buttons until they click. When the correct vacuum levels are reached and all warnings are extinguished, record the vacuum levels, leave the lifter applied and wait for a period of 10 minutes. Inspect the gauges again and check whether the levels have dropped 5% or more from the recorded values. If so do not use go to step 15.

15. Remove the lifter, clean the load and pads thoroughly. Repeat step 15. If the lifter is still loosing more than 5% over the 10 minute period from either circuit, remove the lifter from service and label it 'Out of Service' and ring Hird Ltd Service and Maintenance.

Safety Note 1.

When using the extension arms it is imperative that the pipes from the pads are correctly connected to the quick release fittings prior to vacuum being applied. Failure to do so will isolate the relevant pad from the vacuum system. If the above condition is seen , return load to safe position before trying to rectify, as any attempt to connect the pipe after the vacuum is applied may lead

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LIFTING AND POSITIONING

1. Carry out pre-use check.
2. Position lifter on load within 40mm of centre of gravity.
3. Ensure all pads are in contact with the unit surface and all relevant pad shot off taps are ON (in-line) and quick release fittings are correctly connected (extension arms only)
4. Turn the power 'ON'
5. Press both vacuum actuation buttons on the remote control box until they click.
6. Ensure vacuum gauge reaches at least 65% and all warnings cease.
7. Carry out 50mm lift whilst observing vacuum gauge. Vacuum level should not suddenly drop under load.
8. Check stability of load and lower and adjust if necessary .
9. When confident of stability of load and vacuum the load is raised and if required may now be rotated and tilted to desired angle. Always ensure that there is sufficient space to rotate and tilt the load
10. The load may now be banked into position and final adjustments to tilt and/or rotation carried out by fixers .
11. If mains power is being used it is essential that the cable has an unobstructed pathway both on the ground and in the air to prevent snagging which could lead to a violent arresting of the lifter and potential loss of the load.
12. To release the load, both remote control buttons are lifted to release the vacuum then press the red power switch and ensure all lights are off and vacuum gauges drop to 'O'.
13. It is VERY IMPORTANT that the power switched to 'OFF'. If the switch is left 'ON' the operating solenoids will burn out.
14. The vacuum takes a few seconds to release, so it is vital that all pads are free before the crane or hoisted is raised. This prevents any residual vacuum in the system from lifting the load whilst no power is applied to the pump.

TROUBLESHOOTING

Lifter fails to achieve 65% vacuum

1. Check whether all cups are in contact with the load .
   Reposition cups if necessary
2. Check that nothing is stopping the vacuum lips on the cup from forming a seal. This may be cork spacer pads, an outer lip that has curled under, etc.
   Remove litter and check load and pads, reposition lifter
3. Check the hose clamps for security and tightness.
   Tighten clamps, but only where necessary
4. Check the pipes for damage .
   Contact Hird Ltd for pipe replacement
5. If after rectification the pump will still not achieve 65% vacuum contact Hird Ltd.

Pump fails to run when power switch is set to on

1. Check whether 25A circuit breaker S2 has tripped.
   Press S2 to reset, located on top of function panel.

   If 82 continually needs resetting there is a problem within the function panel. There are no user serviceable parts within and the lifter must be returned to Hird Ltd for investigation
2. Check whether battery has sufficient charge.
   Either recharge the battery or use the lifter on mains power.
3. If the lifter is on mains power, check the leads (and transformer if 110V)
   Replace leads and/or transformer
4. If the lifter still does not function return to Hird Ltd for investigation

Mains operation not possible (POWER light does not Illuminate)

1. Check cables and site supply (and transformer if 110V)
   Replace cables and transformer if necessary. Contact site service electrician about restoration of power .
2. Check whether 2A circuit breaker S1 has tripped.
   Press S1 to reset , located on top of function panel.

   If 81 continually needs resetting there is a problem within the function panel. There are no user serviceable parts within and the lifter must be returned to Hird Ltd for investigation
3. If the lifter still does not function return to Hird Ltd for investigation

Daily Pre-Use Checklist
Vacuum Lifter

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