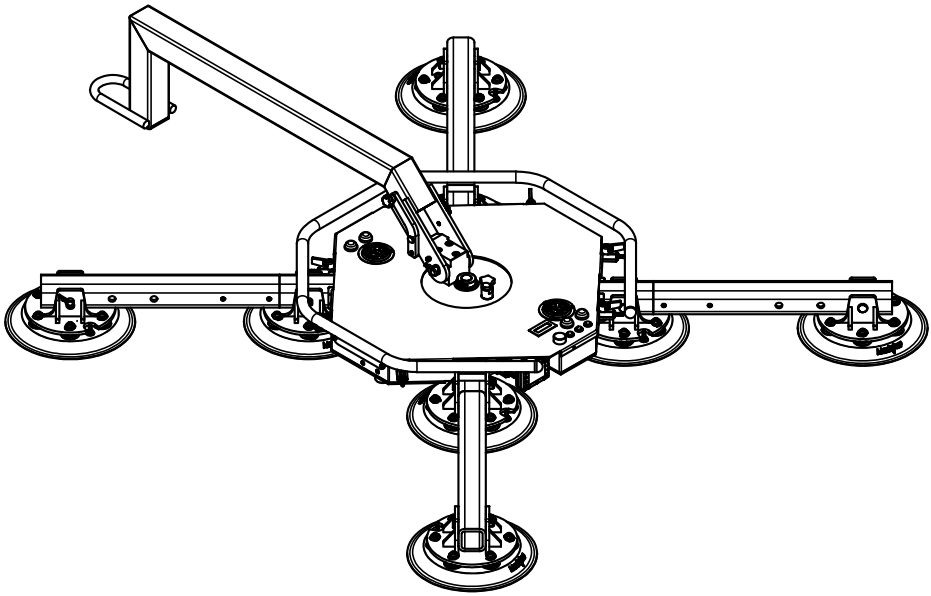
DC POWERED VACUUM GLASS LIFTER (DUAL SYSTEM)

OWNER'S MANUAL

PRODUCT CODE: ARGL-500DS



CONTENTS

The DC Powered Vacuum Glass Lifter (Dual System) ARGL-500DS is an electrical vacuum lifter with a 4-bar tilting mechanism. Integrated with a multi-angle rotation feature, the ARGL-500DS ensures flexibility when vertically rotating and tilting large glass sheets. The ARGL-500DS is equipped with two independent vacuum circuits, which support each other in the event of a system failure to ensure user safety during the working process.

1. SPECIFICATIONS

ARGL-500DS	**Metric** (mm-kg)	**Imperial** (inch-lb)
Number of pads	8	-
Pad dimension	300	12"
Working load limit	Vertical: 400 Horizontal: 500	882 1102
Net weight	81	178.6
Gross weight	107	235.9
Packaging dimension	1070x970x540	42.1"x38.2"x21.3"

- Battery information for the device

Code battery: M12B6 Milwakee
Type battery: Lithium-ION
Voltage: 12V
Current: 6.0Ah
Quantity: 2
Continuous operation time: 2 hours
Working time: 6 hours

- Battery charger for lifter:

Battery charger: C12C Milwakee
Input supply voltage: 100-240VAC
Output voltage: 12V
Output current: 3.0Ah
Quantity: 2
Fully charger time: 2.5 hours
Weight: 460 gram

- Motor information

Vacuum flow rate	32.5 liter/min
Motor	12V DC-4A

2. FEATURES

- Double redundancy with a load capacity of 500kg
- Spring-loaded suction pads
- 360-degree rotation with 45-degree steps
- Four extension arms with the ability to extend and retract
- Two independent vacuum circuits provide mutual aid in the event of a system error
- The automatic vacuum pumping system
- Audio and visual warning system
- 12V power supply by a high-capacity battery

3. THE SLIDE VALVE

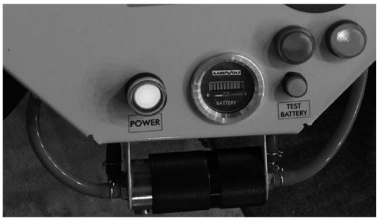
The slide valve is a part of the lifter for leading the vacuum to the vacuum pads system:

- When pressing the slide valve to the OFF position, the audio warning alarm system will be off.

- When pressing the slide valve to the ON position, the audio warning alarm system and the red warning light and the green warning light will be indicate two cases:

- When pressing the slide valve that the vacuum pads system is not placed on the glass surface yet, the red warning light and the green warning light are OFF.

- When pressing the slide valve that the vacuum pads system is fully placed on the glass surface:



If the red warning light is ON and the alarm will sound simultaneously, this means that the vacuum is not enough for lifting.

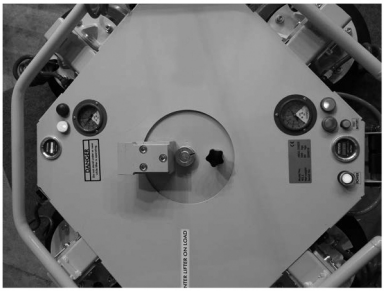
NOTE: Never attempt to lift the glass sheet while the red warning light is ON because the attempt could result in the glass sheet releasing and possibly injuring the operator.

If the red warning light and the alarm are OFF, the green warning light is ON; this means that the vacuum is enough for lifting.

4. THE VACUUM CIRCUITS SYSTEM

4.1 TWO VACUUM CIRCUITS SYSTEM

This vacuum pump system includes two independent vacuum circuits that can support each other. They are connected with the vacuum pads system. Therein, two red vacuum hoses and two blue vacuum hoses are connected with four inside vacuum pads; the rest two red vacuum hoses and two blue vacuum hoses are connected with four the outside vacuum pads. Therefore, if one of the two vacuum circuits system fails, the rest of the vacuum circuit system is still operational to ensure the lifter is safe during the lifting process. It is not only protective for the glass sheet from dropping, but also to eliminate injury for the operator.

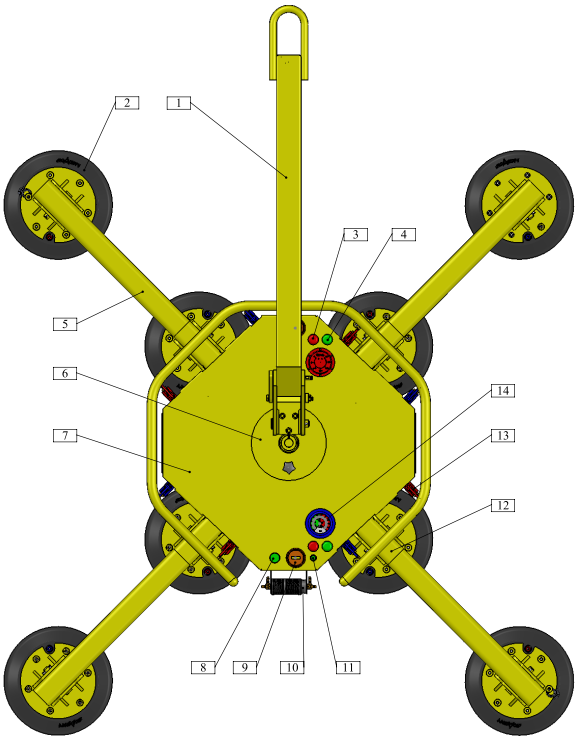


Press the POWER button to start the vacuum circuits system and this system will supply the power for the vacuum pump. The vacuum pump will supply the vacuum for the vacuum pads system. The vacuum pump stops the pumping once the vacuum gauge indicates 5-70 kPa and it will activate vacuum pumping automatically once the vacuum gauges indicate 2 -55 kPa.

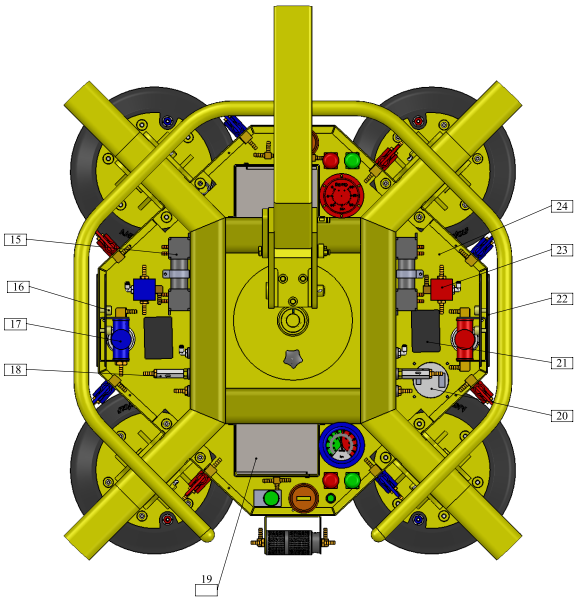
4.1 CREATING THE VACUUM STATE

It consists of the two vacuum tanks that are mounted on the lifter. These tanks are mounted with the two check valves and these check valves are connected with the two vacuum pumps to create the vacuum. The two vacuum hoses are connected with the slide valve which is connected with the two filters. These filters are connected with the two dividers that include two inlet vacuum hoses and six outlet vacuum hoses. Therein, the two inlet vacuum hoses are connected with the two vacuum gauges and four ball valves leading to the vacuum into the vacuum pads system.

4. THE VACUUM CIRCUITS SYSTEM



1 . Hook
2 . Pad
3 . Red Warning Light
4 . Green Warning Light
5 . Extension Arm
6 . Rotate Plate
7 . Cover Plate
8 . Power Button
9 . Battery Signal
10 . Slide Valve
11 . Test Battery
12 . Frame
13 . Ball Valve
14 . Vacuum Gauge



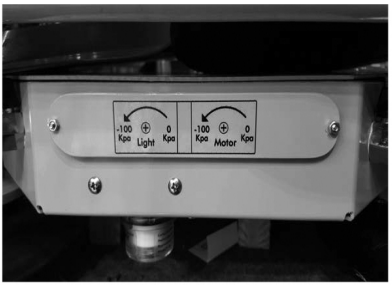
15 . Motor
16 . Adjustment Vacuum
17 . Filter
18 . Check Valve
19 . Battery
20 . Alarm
21 . Circuit
22 . Cover
23 . Divider
24 . Base

5. VARIABLE RESISTOR ADJUSTMENT

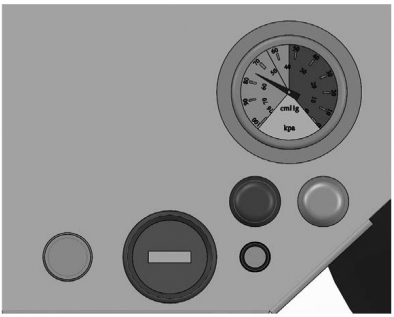
5.1 THE PURPOSE OF THE VARIABLE RESISTOR

The variable resistor is used to set the value of the vacuum pump, the audio warning alarm system, and the warning light system

5.2 VARIABLE RESISTOR OPERATION

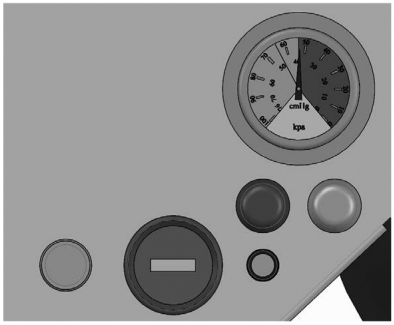


The variable resistor includes the "Motor" (right) & the "Light" (left)



For the Motor (right): It is used to adjust the vacuum pump level:

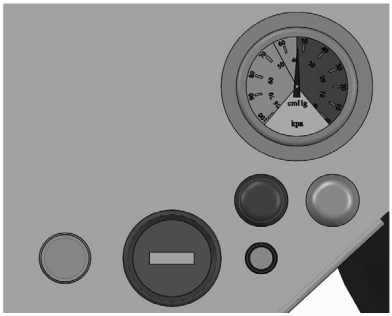
- If the vacuum is lower than the setting value (-70 kPa), the vacuum pump is OFF.



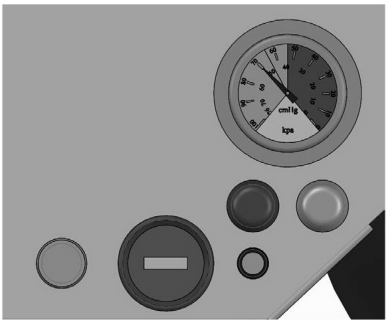
- If the vacuum is bigger than the setting value (-55 kPa), the vacuum pump is ON.

For the Light (left): It is used to adjust the audio warning alarm and warning light systems:

- If the vacuum is bigger than the setting value (-55 kPa), the red warning light and the alarm are ON and the green warning light is OFF



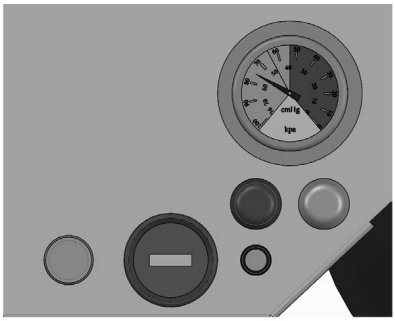
5. VARIABLE RESISTOR ADJUSTMENT



- If the vacuum is lower than the setting value (-55 kPa), the red warning light and the alarm are OFF, and the green warning light is ON.

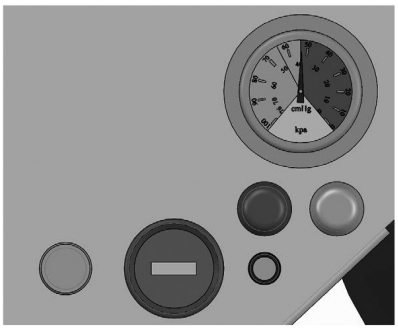
5.2 FULL OPERATING SYSTEM

- The POWER button is the OFF position: The vacuum pump, red warning light, green warning light, and alarm are OFF. When pressing the battery test button, the battery test is ON.



- When pressing the POWER button, it will be ON and the slide valve has two cases:

The slide valve is the OFF position:
The red warning light, green warning light, and alarm are OFF.
- If the vacuum is lower than the setting value (-70 kPa), the vacuum pump is OFF:



- If the vacuum is bigger than the setting value (-55 kPa), the vacuum pump is ON:

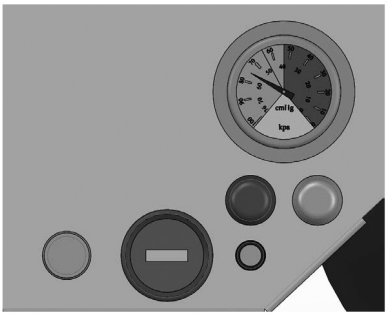
5. VARIABLE RESISTOR ADJUSTMENT

The slide valve is the ON position:

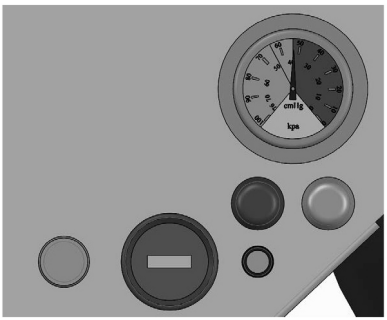
- If the vacuum is bigger than the setting value (-55 kPa), the red warning light and alarm are ON and the green warning light is OFF:

- If the vacuum is lower than the setting value (-55 kPa), the green warning light is ON, the red warning light and the alarm are OFF:

- If the vacuum is lower than the setting value (-70 kPa), the vacuum pump is OFF:



- If the vacuum is bigger than the setting value (-55 kPa), the vacuum pump is ON:

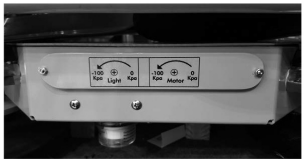


5. VARIABLE RESISTOR ADJUSTMENT

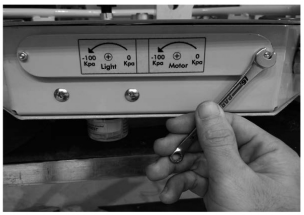
5.1 VACUUM ADJUSTMENT INSTRUCTIONS

Different altitudes have different atmospheres. Therefore, an appropriate vacuum adjustment is crucial for safety. There are instructions to adjust the vacuum that the operator has to follow:

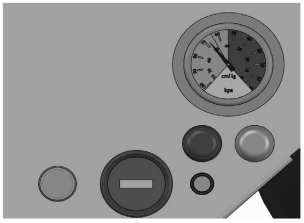
Step 1:
Open the variable resistor cover

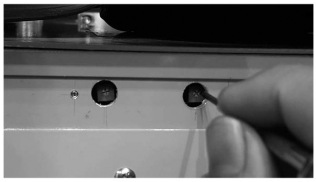


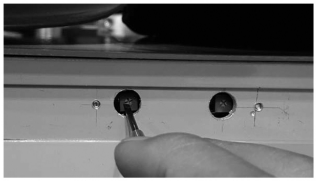
Step 2:
Use a screwdriver to take out the screw to open the variable resistor cover



Step 3:
Press the POWER button, lock the eight ball valves and observes the vacuum level on the two vacuum gauges. And then adjust the vacuum to increase from the-1 kPa or -2 kPa level. For example: from -70kPa to -68 kPa



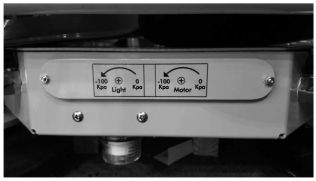




Step 4:
Use your hands to adjust the vacuum pump or the alarm and warning light:

- Adjust the clockwise direction, which means the vacuum will be decreased

- Adjust the counterclockwise direction, which means the vacuum will be increased



Step 5:
When finishing the adjustment process, the operator uses the screw to install the variable resistor cover back and make sure that it is tightly and correctly positioned.

6. THE BATTERY TEST

The battery test is specially designed for testing the battery level. The operator can inspect the battery level at any time before operating the lifter. It consists of three battery levels:

- The red battery level: The lifter cannot lift any loads. The operator must recharge for the battery.

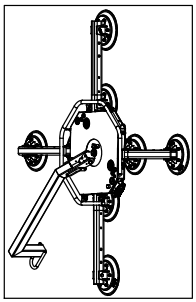
  The yellow battery level: If the lifter in the yellow level, the operator must recharge for the battery. All efforts to lift the load could be dangerous for the operator and the sheet material.

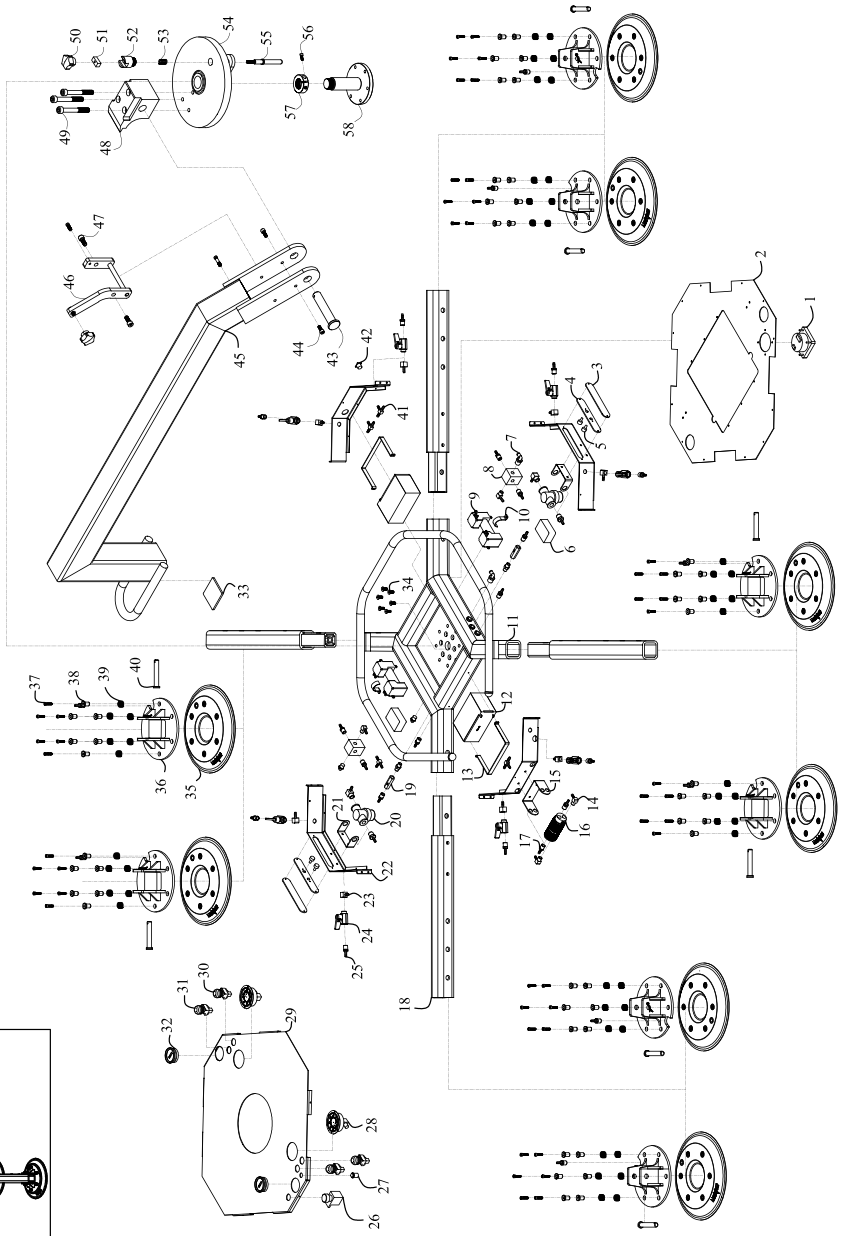
- The green battery level: With this level, the battery is full and the lifter is ready to lift.

- When the vacuum pump is operating, the test battery will not indicate the battery levels. When the vacuum pump stops, the test battery will indicate the battery levels.

- After each shift working, the operator needs to inspect the battery level to make sure the battery has full power for operating during the next shift.

DC POWERED VACUUM GLASS LIFTER (DUAL SYSTEM) ARGL-500DS ASSEMBLY DIAGRAM





DC POWERED VACUUM GLASS LIFTER (DUAL SYSTEM) ARGL-500DS
ASSEMBLY DIAGRAM

PARTS LIST

No.	Code	Name Part	Qty.
01	ARGL500DS-001	Alarm	01
02	ARGL500DS-002	Base	01
03	ARGL500DS-003	Cover Sensor	02
04	ARGL500DS-004	Pad Sensor	02
05	ARGL500DS-005	Sensor	04
06	ARGL500DS-006	Circuit	02
07	ARGL500DS-007	Connection $G\frac{1}{8}$ - Ø4	04
08	ARGL500DS-008	Divider	02
09	ARGL500DS-009	Motor	02
10	ARGL500DS-010	Bracket Motor	02
11	ARGL500DS-011	Frame	01
12	ARGL500DS-012	Battery	02
13	ARGL500DS-013	Bracket Battery	02
14	ARGL500DS-014	Elbow male G1/4	04
15	ARGL500DS-015	Bracket Slide Valve	01
16	ARGL500DS-016	Slide Valve	01
17	ARGL500DS-017	Fitting male G1/4	02
18	ARGL500DS-018	Extension Bar	04
19	ARGL500DS-019	Check Valve	02
20	ARGL500DS-020	Filter	02
21	ARGL500DS-021	Bracket Filter	02
22	ARGL500DS-022	Cover	04
23	ARGL500DS-023	Elbow female G1/4	04
24	ARGL500DS-024	Ball Valve G1/4	08
25	ARGL500DS-025	Fitting male G1/4	08
26	ARGL500DS-026	Power Button	01
27	ARGL500DS-027	Battery Test Button	01
28	ARGL500DS-028	Vacuum Gauge	02
29	ARGL500DS-029	Cover Plate	01

No.	Code	Name Part	Qty.
30	ARGL500DS-030	Green Warning Light	02
31	ARGL500DS-031	Red Warning Light	02
32	ARGL500DS-032	Battery Signal	02
33	ARGL500DS-033	Plastic Plate	01
34	ARGL500DS-034	Hexagon Socket Countersunk Head Screw M8x20	06
35	ARGL500DS-035	Vacuum Pad Ø310	08
36	ARGL500DS-036	Bracket	08
37	ARGL500DS-037	Hexagon Socket Head Cap Screw M8x30	48
38	ARGL500DS-038	Bush	48
39	ARGL500DS-039	Spring	48
40	ARGL500DS-040	Pin Ø15.5	08
41	ARGL500DS-041	Tee Connector	04
42	ARGL500DS-042	Adaptor	01
43	ARGL500DS-043	Pin Ø20	01
44	ARGL500DS-044	Hexagon Socket Head Cap Screw M6x15	02
45	ARGL500DS-045	Hook	01
46	ARGL500DS-046	Locking Arm	01
47	ARGL500DS-047	Hexagon Socket Head Cap Screw M8x20	02
48	ARGL500DS-048	Locking Base	01
49	ARGL500DS-049	Hexagon Socket Head Cap Screw M10x80	03
50	ARGL500DS-050	Hand Knob M6 (Female Thread)	02
51	ARGL500DS-051	Stop Guide	01
52	ARGL500DS-052	Body Locking	01
53	ARGL500DS-053	Spring	01
54	ARGL500DS-054	Rotate Plate	01
55	ARGL500DS-055	Locking Pin	01
56	ARGL500DS-056	Hexagon Socket Head Cap Screw M4x15	01
57	ARGL500DS-057	Nut M25	01
58	ARGL500DS-057	Rotate Pin	01

GET THE AARDWOLF AADVANTAGE

9. OPERATING INSTRUCTIONS

9.1 BEFORE OPERATING THE LIFTER

Attaching the lifter to a crane or other hoist:

- Determine whether the capacity of a crane or other hoist is fit with the lifter's capacity
- Perform a load test for the lifter before lifting the load

Safety instructions:

- Carefully read this user manual before using the lifter.
- Operate only by personnel who are well trained or authorized.
- The load must not exceed the maximum allowable weight specified.
- The load must be a single sheet with only a smooth, non-porous surface.
- Ensure that the vacuum pads system surface is clean and free of dirt & oil.
- The battery must be full power during the operation process. Avoid hard impacts that could damage the lifter and glass sheets. Avoid operating the lifter in the rain and only use in temperatures above 0°C. Determine the size of the glass and that it is fit with four or eight vacuum pads.
- The vacuum is reach within from -55 kPa to -70 kPa on the vacuum gauge.
- Do not carry out any lifting operations if any issues are found.
- Ensure that no one stands under the load.
- Wear proper safety equipment, such as a helmet, gloves, and safety boots.
- Never operate a lifter that is damaged, malfunctioning, or missing parts.
- Never lift a load when the two vacuum gauges show inadequate vacuum.
- Never touch the slide valve in the OFF position during the lifting process. Never use solvents, gasoline, or other harsh chemicals to clean the vacuum pads. Never disengage both the locking arm and the hand knob if do not rotate or tilt the glass sheet.
- Never try to lift a load when the red warning light is ON.
- Use pad covers to protect the vacuum pads system when the lifter is not in use.

9.1 INSTRUCTIONS FOR USE

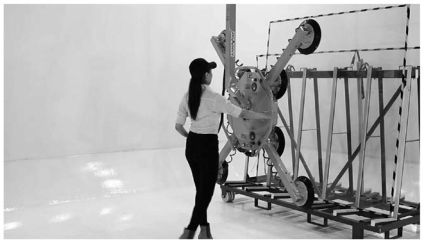
The lifter ARGL-500DS is specially designed for lifting and moving glass sheets effectively. It is a simple operation within the factory or on construction sites. In order to ensure safety during the lifting process, the operator must follow the instructions below

9. OPERATING INSTRUCTIONS

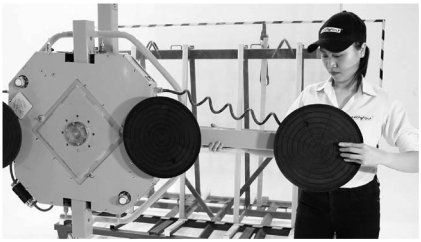
Step 1:
All preparations must be completed prior to lift any loads.

Step 2:
Connect the ARGL-500DS with a crane or other hoisting equipment to start and make sure there are no obstructions.

Step 3:
Use the control of the crane or hoist for moving the lifter to the desired position of the glass sheet.

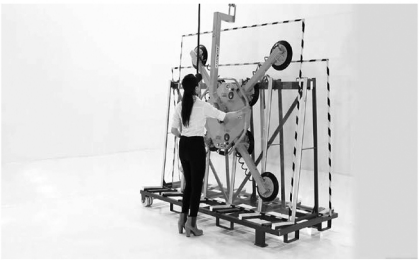


Step 4:
Manually adjust the vacuum pads so that it is suitable for the glass sheet.
(For more detail, please see "9. Vacuum pads adjustment for different sizes".)



Step 5:
Turn the POWER button on

Step 6:
Use the control of the crane or hoist to place the vacuum pads system on the glass sheet. Make sure that the vacuum pads are placed on the center of the glass sheet for balance.



Step 7:

Press the slide valve in the ON position to supply the vacuum into the vacuum pads system. The operator observes the vacuum level on the two vacuum gauges (green vacuum gauge and red vacuum gauge):

- When the one vacuum gauge indicates enough vacuum and the rest vacuum gauge indicates not enough vacuum (>-55 kPa), the alarm of this vacuum gauge will sound and the red warning light will be ON. When one of the two vacuum gauges reaches -70 kPa, the vacuum pump stops, the alarm and red warning light are OFF, and the green warning light is ON.
- When the two vacuum gauges do not reach -55 kPa, the red warning light and the alarm are ON, and the green warning light is OFF. When the two vacuum gauges reach -55 kPa, the red warning light and the alarm are OFF, the green warning light is ON. This means that the lifter is ready to lift and move the glass sheet.

Step 8:

Lift and move the glass sheet to the required location. Putting it down slowly.

NOTE:

- The lifter can tilt the load from 0 to 90 degrees in the vertical and horizontal direction by turning the locking arm.
- Use the hand knob (M6) to rotate 360 degrees with each 45 degree steps.
- During the lifting and moving process, if one of the vacuum circuits system fails, the warning alarm system will sound automatically. However, this lifter is equipped with a two vacuum circuits system that operates independently, so that the rest of the vacuum circuit system still creates the vacuum to supply the vacuum pads system. Therefore, the lifter is safe to continue lifting the load.

9. OPERATING INSTRUCTIONS

Step 9:

When the glass sheet has been put down safely, press the slide valve in the OFF position to release the vacuum. After that, use the control of the crane or hoist to take the lifter off of the glass sheet.

Step 10:

Carefully turn off the power source by pressing the POWER button to finish the lifting process.

10. VACUUM PADS ADJUSTMENT

The lifter is equipped with eight vacuum pads wherein four inside vacuum pads are mounted on the frame of the lifter and four outside vacuum pads on the outside mounted on the extension bars. This makes the lifter is capable of lifting glass sheets with different sizes.

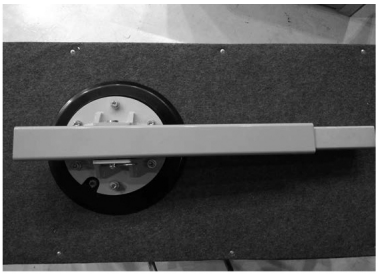
10.1 FOR EIGHT VACUUM PADS

Step 1:

Use your hands to assemble the extension bars into the frames, attach the pins into the hole of the bracket vacuum pads, and then attach the cotter pins into the hole of the pins.

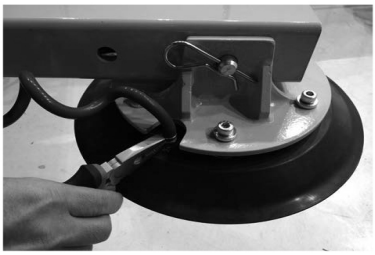
10. VACUUM PADS ADJUSTMENT

Step 2:
Attach the bracket vacuum pads onto the extension bars.

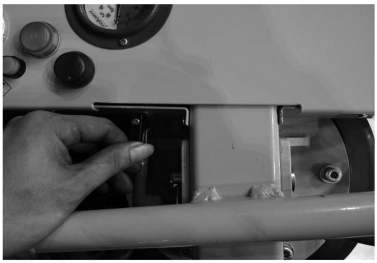


Step 3:
Attach the vacuum hoses into the vacuum pads system.

Step 4:
Tightly mount the collars into the vacuum hoses.



Step 5:
Open the ball valves to supply the vacuum for the vacuum pads system.

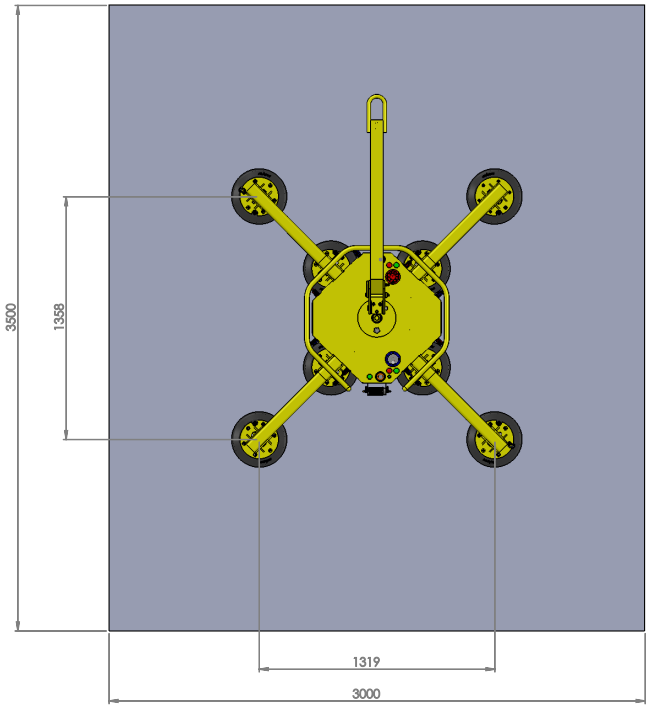


Step 6:

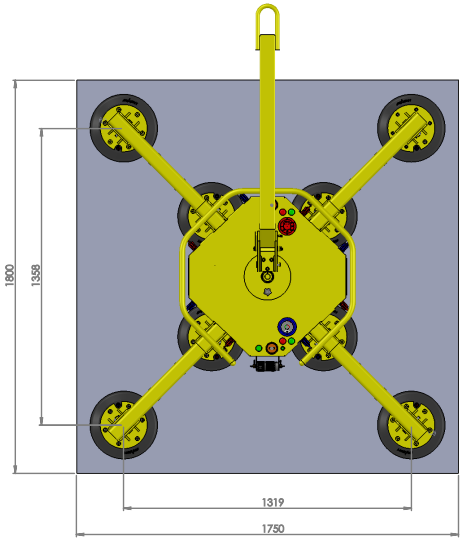
Carefully inspect all the steps to ensure that they are installed/assembled correctly before using.

10. VACUUM PADS ADJUSTMENT

The maximum size of the glass sheet is: 3500 x 3000 mm



The minimum size of the glass sheet is: 1800 x 1750 mm

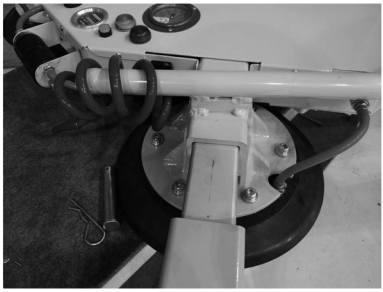


10.2 FOR FOUR VACUUM PADS

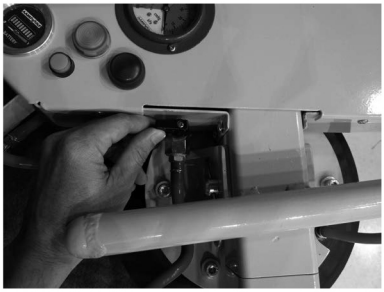
Step 1:
Loosen the collar on the vacuum hose.

Step 2:
Take the vacuum hoses out of the vacuum pads system

Step 3:
Use your hands to disassemble the extension bars out of the frames by removing the cotter pins and the pins.



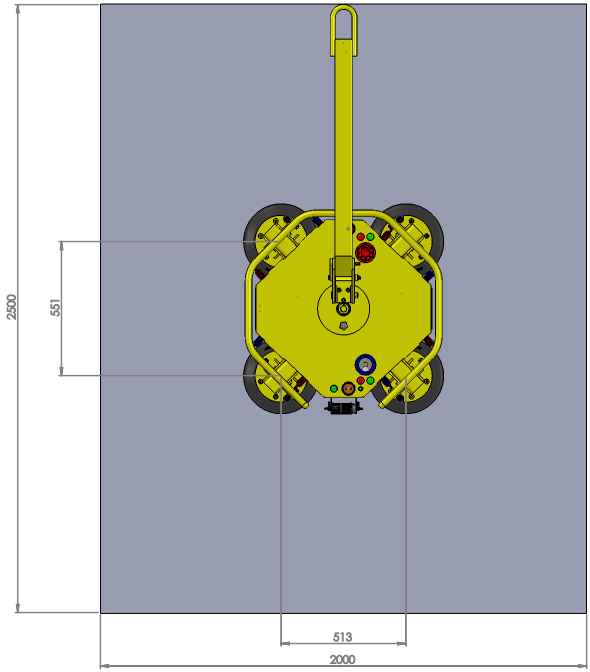
Step 4:
Close the ball valves to cut the supply to the vacuum so that the vacuum pads are removed.



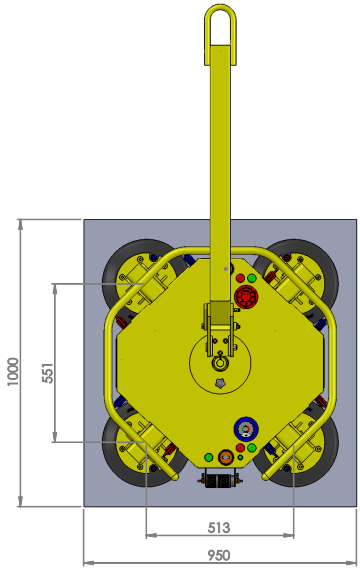
Step 5:
Carefully inspect all the steps to ensure that everything is disassembled correctly before use.

10. VACUUM PADS ADJUSTMENT

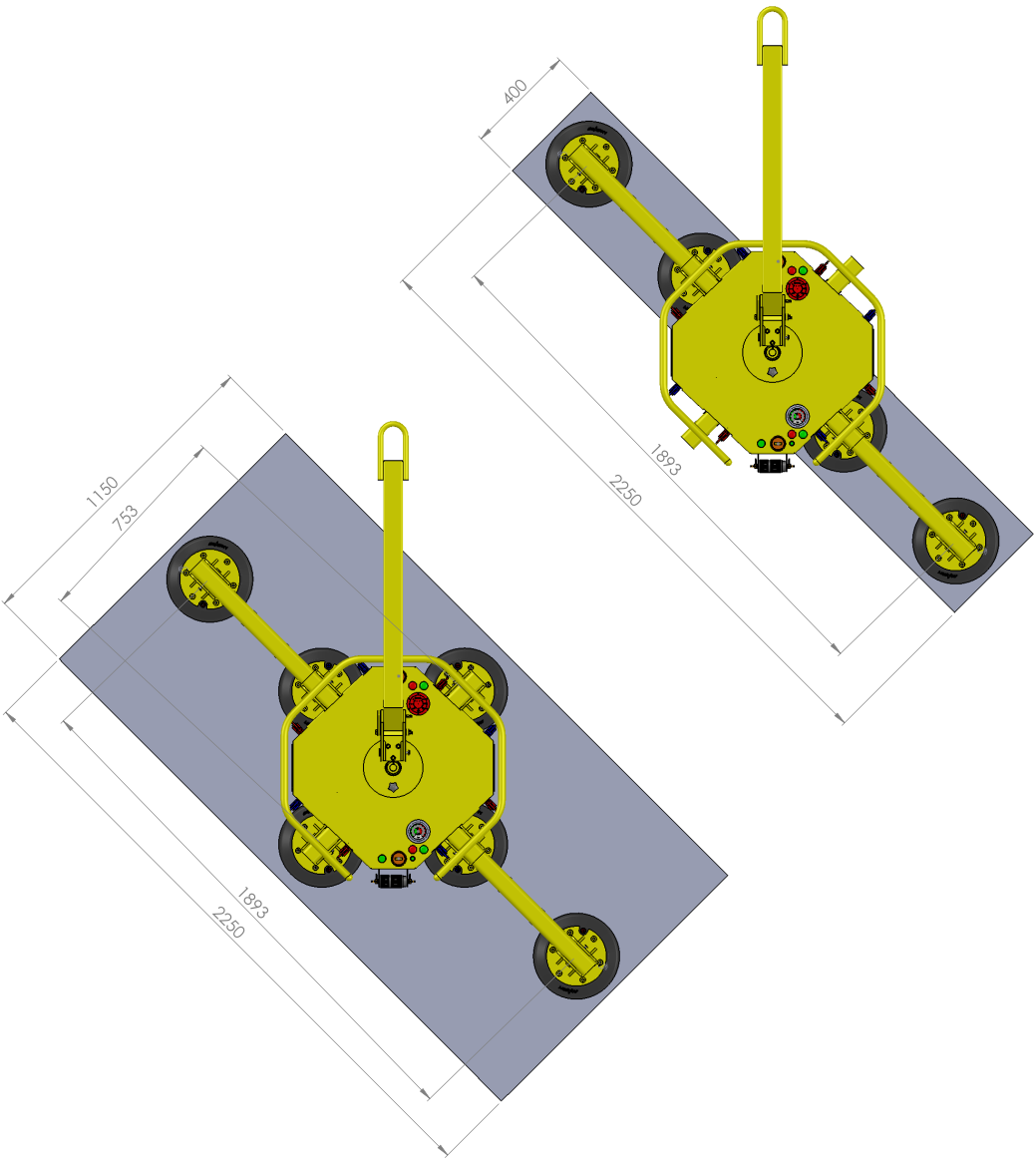
The maximum size of the glass sheet is: 2500 x 2000 mm



The minimum size of the glass sheet is: 1000 x 950 mm



10. VACUUM PADS ADJUSTMENT



When using the vacuum pads system over a long period, so that there is normal wear and tear and aging, the operator can replace the new original vacuum pads from Aardwolf to ensure the high quality of the pads. They can be replaced very simply. The operator uses the 8 mm hex key and driver to disassemble the hexagon socket head cap screws that are on the bracket vacuum pad. After that, replace the new original vacuum pad.

11. INSPECTIONS & MAINTENANCE

11.1 INSPECTIONS

Inspect the ARGL-500DS regularly to ensure that it does not exhibit the following faults:

- The battery is disconnected before servicing the lifter.
- Contamination or debris on the vacuum pads system and the
- load surface.
- Visual damage of the device's structure and vacuum system.
- Clean the air filter.
- Listen for unusual vibrations or noise while operating the lifter.
- Cracks, corrosion, cuts, or any deficiency affecting the entire lifter.
- The alarm system for warning in dangerous situations.
- The vacuum gauges for an operating situation.
- Damaged edges of the lifter while sealing.
- Repair all faults before using the device.

11.2 MAINTENANCE

A good maintenance planning will bring benefits for your lifter. It not only increases safety and using values, but also reduces maintenance cost:

- Perform simple maintenance tasks for the lifter such as repairing, replacing grease so that the lifter runs smoothly.
- Check the rubber pads to ensure that they are free from dirt and damages
- You must clean the air filter to eliminate dust or contamination.
- Release the water in the vacuum tank is located on the bottom by screwing the air outlet valve.
- If the lifter is used for less than one day in a two-week period, you should perform an inspection and maintenance to ensure that the lifter is safe and does not have any faults.
- The lifter may experience normal wear and tear and ageing. You should replace any reduced quality parts with new original parts.
- The lifter and hoisting accessories must be stored in a place where they are protected against weather conditions and aggressive substances.

CE - DECLARATION OF CONFORMITY

We declare that the product is in conformity with the following standard:
The Machinery Directive 2006/42/EC.

Note: It is the responsibility of the user to adapt to state or local laws. The end-user is responsible to use the equipment safely in a manner that it is designed for and within the rated capacity of the unit.

12. WARRANTY

12.1

After receiving the product, the buyer should check, based on the spare parts list and spare drawings attached to the product, that the spare parts have not been damaged or lost during shipment. Any damage or losses must be officially reported to Aardwolf Industries LLC within eight days from the date of purchase.

12.2

This lifter is granted a 12-month warranty based on Aardwolf Industries LLC's warranty policy from the date of purchase.

12.3

The warranty coverage is not applicable:

- Whenever the lifter is handled incorrectly during maneuvering
- Whenever the operator fails to comply with the instructions in this booklet
- Whenever the lifter's maximum permissible capacity is exceeded
- Whenever the specifications for glass thickness are not followed
- Whenever the damage is due to inadequate maintenance and inspections
- Whenever the damage is due to improper storage
- Whenever repairs were performed by the user without our permission
- Whenever unofficial spare parts were used.

12.4

Aardwolf Industries LLC's warranty does not cover the incorrect assembly or misuse of the lifter, the lack of maintenance and repair of the lifter as scheduled by the manufacturer, operated by incompetent or unauthorized operators, or unofficial spare parts being used or installed.

USA

AARDWOLF USA
19201 S Reyes Avenue, Unit C7
Compton California, 90221
(562) 553-6050
leo@aardwolfusa.com
www.aardwolfusa.com

INDIA

AARDWOLF NORTH INDIA
Harmara Road, Industrial area,
Madanganj, Kishangarh, Rajasthan ñ
India / Pin no. 305801
Tel: +91 93584 48474
sales@aardwolf.co.in
Web: www.aardwolf.co.in

AUSTRALIA

AARDWOLF AUSTRALIA
1/5 Stanton Road,
Seven Hills NSW 2147
+02 9838 8427
enquiries@aardwolfaustralia.com
www.aardwolfaustralia.com

INDIA

AARDWOLF SOUTH INDIA
9/27, Ground Floor, 5th Main Road,
Ganesha Block, Sultanpalya,
R T Nagar Post, Bengaluru-560 032
Mob: +91 99017 24600
bengaluru@aardwolf.co.in
www.aardwolf.co.in

GERMANY

STONE GLASS EQUIPMENT UG
Am GutstKch 11, 8451 Crimmitschau
Blankenhain, Germany.
+49 366 0811 9236
sales@aardwolf.com.de
www.aardwolf.com.de

INDIA

AARDWOLF CENTRAL INDIA
Mob: 91 97659 06007
mumbai@aardwolf.co.in
www.aardwolf.co.in

VIETNAM

AARDWOLF VIETNAM
1B, An Phu, Thuan An,
Binh Duong, Vietnam.
+84 274 371 2827438/39
sales@aardwolf.com.au
www.aardwolf.com.au

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