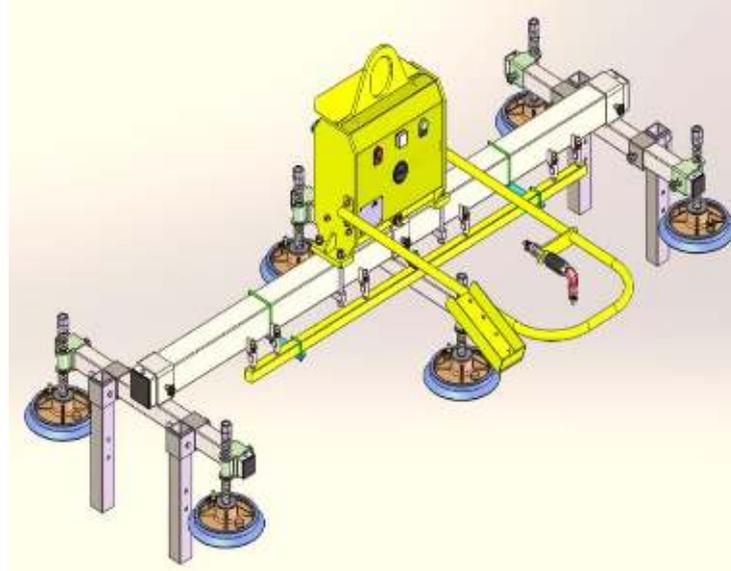




Vacuum lifter

BLA400-6-B



- 1、 Plate parameters provide for vacuum lifter lifting, Usually match with CNC laser cutting machine.

CNC LASER TABLE SIZE:3000X1500MM

Workpiece information: Metal sheet, AL sheet, Mild Steel and Stainless Steel) etc.

The surface of sheet, even, smooth, densification.

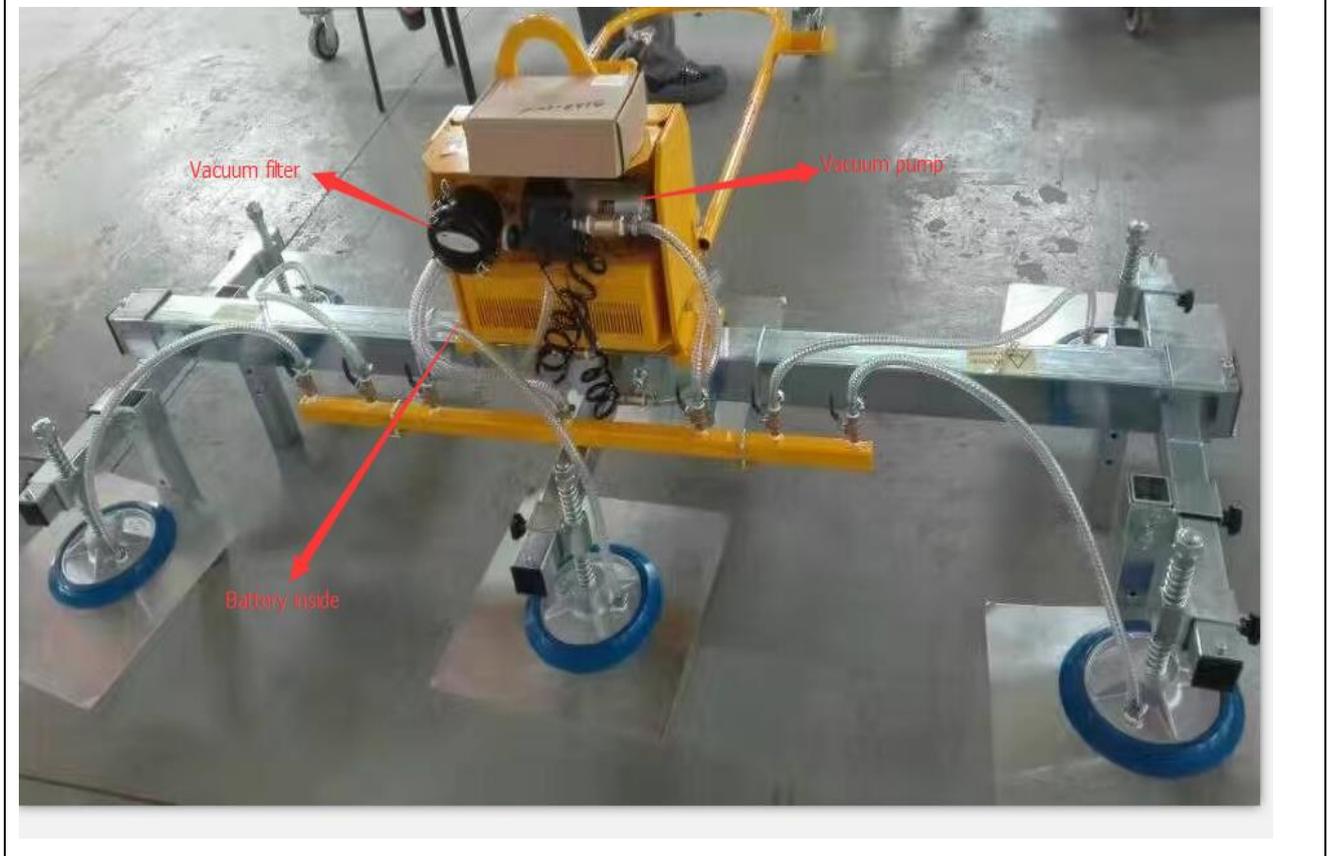
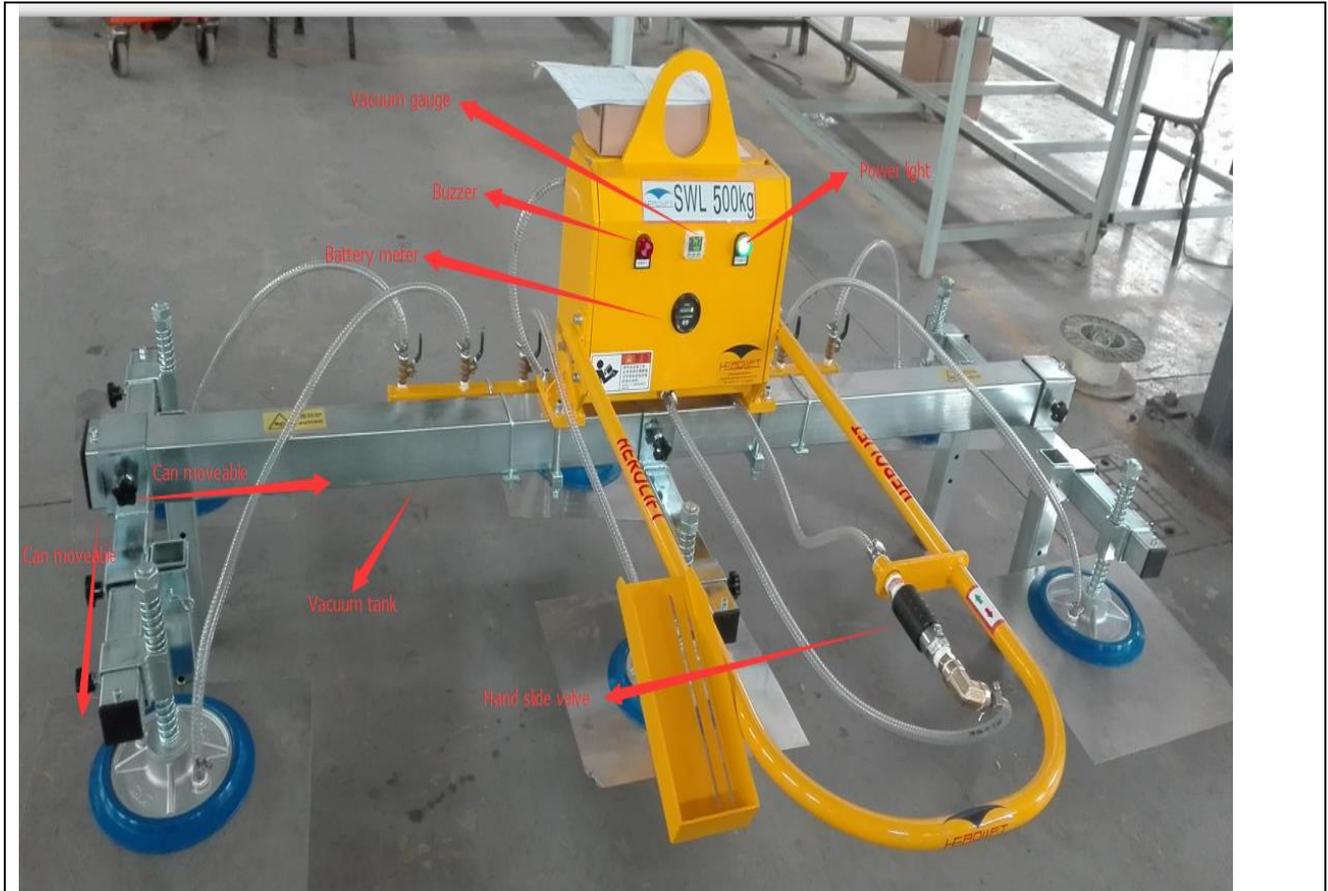
Items	Max. weight (kg)	Length(mm)	Width(mm)	Max. Thickness
Metal sheet	300-400kg	3000	1500	8-10

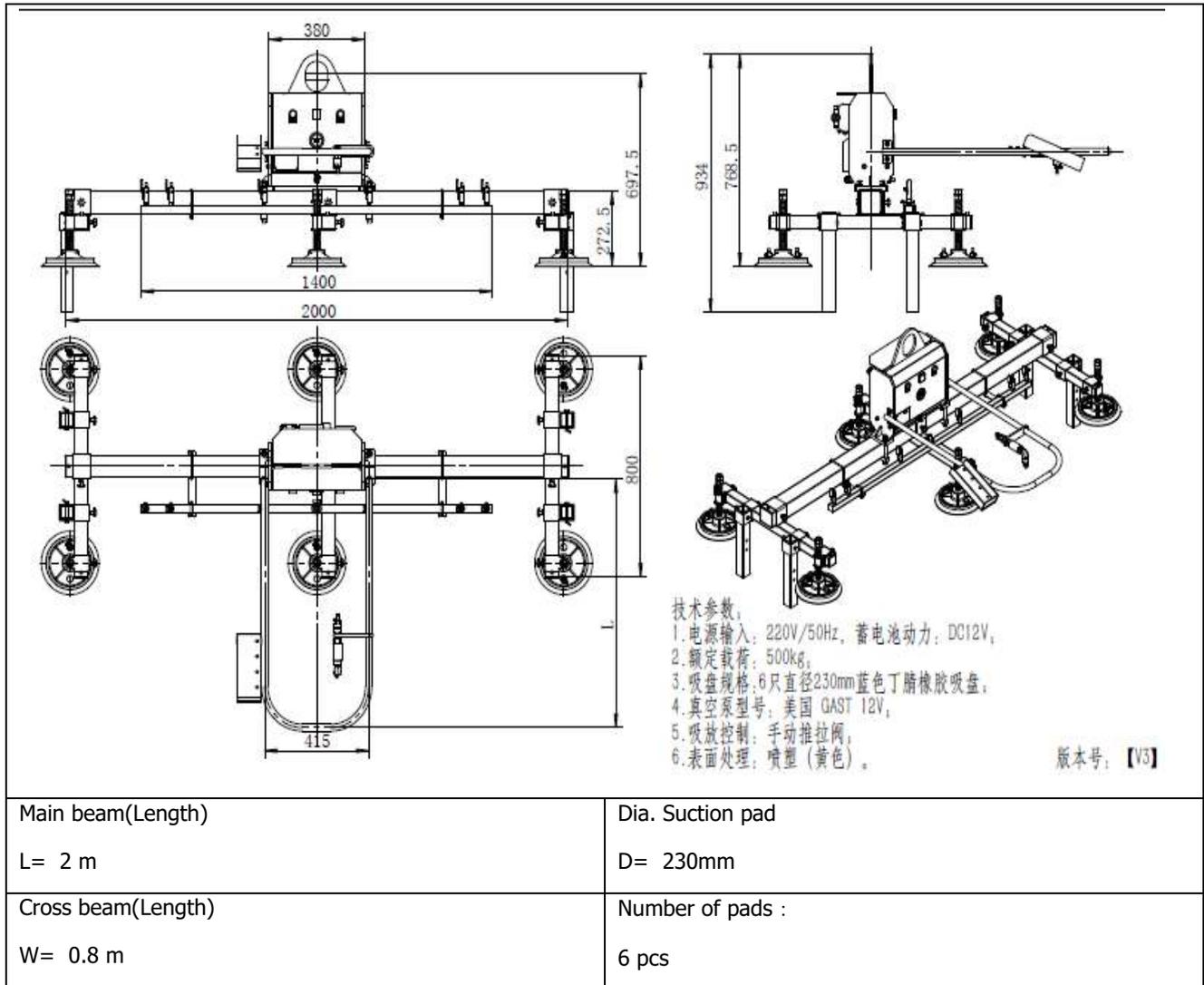
- 2、 Existing crane mechanical and electrical configuration: /

- (1) Power supply:12VDC battery power need 220V. Single phase recharger,
- (2)Operation manner: Horizontal handling, operate vacuum suction and release by manual
- (3)Lifting equipment: Driving crane/Jib arm with crane **(Not include)**

- 3、 Vacuum lifter specification description:

3.1 Equipment specification selection





3.2 Main performance indicators

Model No.	BLA400-6-B ;	Maximum load	400kg
Overall dimensions	2000mmx800mmx850mm (Approx) ;	Power input	12VDC battery power need 220V. Single phase need recharger,
Model of Control	Suction and release control by manual push-pull valve	Suction and release time	Less than 2s, (Only first suction time slightly longer, about 10~15s)
Maximum pressure	85% Vacuum degree (Approx 0.85Kgf)	Warning pressure	60% vacuum degree (Approx 0.6Kgf)
Security coefficient	S>2.0, (Horizontal lifting)	Net weight	95kg (Approx) ;
Pressure maintaining (when power failure)	After Power Failure, the holding time when suction plate by vacuum system >15min.		
Safety alarm	When the pressure is lower than the set alarm pressure(60%), Sound and light alarm automatic alarm.		
Speed test :	Apply plate ≤2s		

Release plate ≤ 2s

3.3 Description of the system characteristics

3.3.1 Design standard

The equipment strictly is accordance with the EU CE standard **EN13155:2003**, To carry on the design on based of **US ASME (Mechanical engineering association) B30-20-2006** standard and **Germany UVV18** standard, Main design index is higher than the above standard.

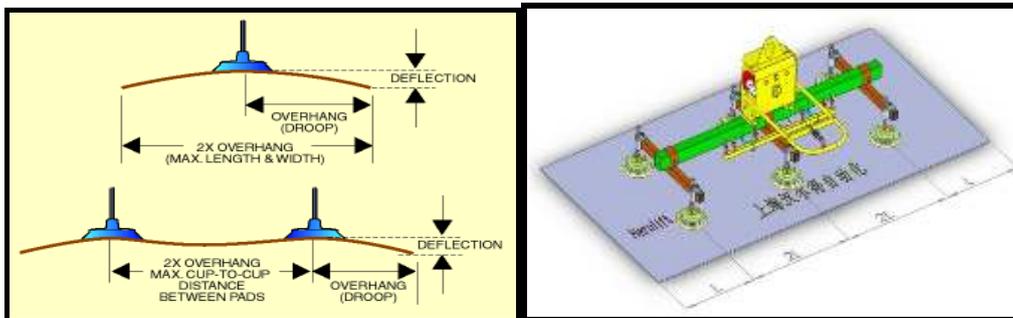
- (1) Safety factor : Main design is greater than 2.0, Vacuum system pressure value for calculation is 60%, The actual peak pressure can reach 85% degrees, Set aside about 40% degrees.
- (2) Board of overhang

To calculated according to the board overhang. (Minimum thickness)

Minimum thickness of plate: 1.6mm

Max. overhang L = 762mm,

See below schematic diagram.



Remarks: If the board handling amount of overhang beyond the maximum allowable value, Can cause irreversible permanent deformation of board.

3.3.2 Suction force calculation :

Dia. 230mm.

Single pad max. suction force in theory on horizontal = Effective surface (Theory of area * factor) * calculated pressure (0.6bar). $= (0.115 * 0.115 * 3.14) * 0.6 * 10000 = 249N$, Approx 249Kgf.

According to the double safety factor, Actually allow the suction pad $249/2 = 124kgf$, number of 6 total suction force **700kgf.**

Note: The holding force mentioned above is calculate on 60% vacuum pressure, maximum vacuum degree of the system will be up to 85% above in a normal working condition.



3. 4 Main Spare parts list and functional description.

Items	Name	Technical Data	Supplier	Quantity
1	Vacuum pump	0.09kW,3m ³ /h, Max. vacuum 85%	USA GAST	1 pc
2	Vacuum pad	Normal temperature Suction pad,Φ230mm	China	6 pcs
3	Vacuum gauge	DP-100	Panasonic	1 pc
4	Vacuum No-return	G1/2"	Italy OR	1 pc
5	Vacuum filter	GLQ VF 1/2	China	1 pc
6	Battery	12V DC POWER	China	2pc
7	Manual Ball Valve	G 1/4",2/2 way	China	6 pcs
8	Power meter	HT0624	China	1 pc
9	Steel structure	Custom-Tailor	China	1 pc
10	Control handle	Custom-Tailor,The integrated control unit,The surface coating processing	China	1 pc
11	Vacuum tank	Integration of main beam	China	1 pc
12	Warning unit	Sound-light alarm, With independent rechargeable battery type.	China	1 pc
13	Storage support	Standard, A set of two	China	1 pc
14	The electric box and accessories	Special Edition	China	1 pc

The device includes the following main components :

1、 Vacuum pump:

To choose USA brand of GAST, Oilless, air cooling, rotary vanes vacuum pump, bleed air rate 3m³/h, and the max. Vacuum degree up to 85% ; to save energy, small and light, maintenance-free, etc

Oil free air cooling type rotary vane vacuum pump, connected to single phase 220v power can produce vacuum, As a core part of vacuum system, The highest vacuum degree 85%;

2、 Vacuum pad:

To suction the work piece surface, Rubber in contact with the workpiece, ensure that won't cause damage to the workpiece surface.

3、 Vacuum filter :

To eliminate the dust and particles in the air flow, ensure the lifetime of the vacuum pump ;

4、 Vacuum gauge : To show the vacuum level to the operator, Provide security;

5、 Vacuum pressure switch :

Pump-film type, When insufficient vacuum pressure, To give electrical signal to alarm system.

6、 Manual slide valve :

To switch off the access of vacuum pump and suction pads between the air flow, Safety locks , prevent accidental operation.



7、 Vacuum non-return valve :

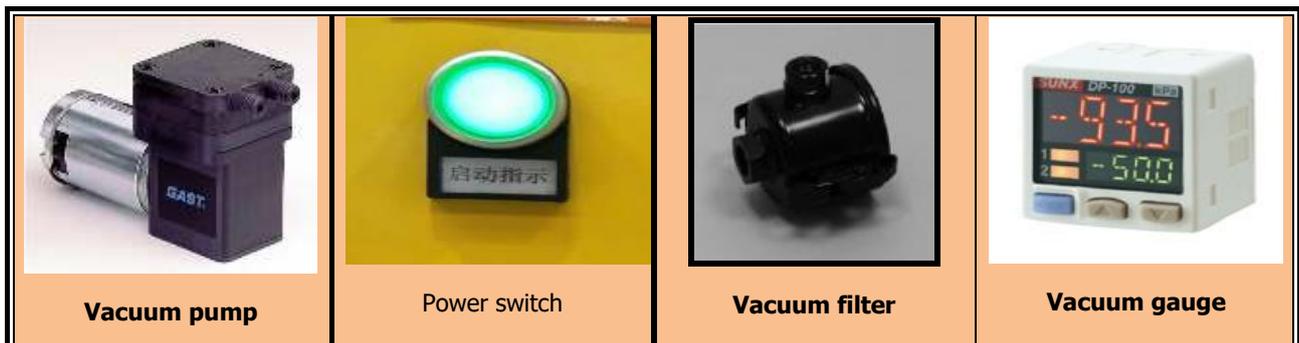
When the system power failure occurs, automatically shut off the vacuum pump and air channel, Lock the vacuum energy of vacuum tank. Provide enough pressure holding time, ensure the workpiece will not falling in suddenly.

8、 Manual Ball Valve :

To manually open or close vacuum pump and suction pads pathway, convenient maintenance.

9、 Alarm indicator lamp :

When the suction force of a single set of suction pads is insufficient, The corresponding indicator light alarm.



Pad instruction





3.5 The advantages of the design

Standard design :

- 1) **Vacuum tank**----- When the power failure in suddenly, the pad always can holding the sheet not falling down less than 20 minutes and more.
- 2) **Adjustable pad/beam**-----Every two pads are installed on the two sides of the cross beams, each cross beam is moveable on the main beam, and each suction pad is also moveable on the cross beam, which can ensure a same equipment can handling the different sizes metal sheet.
- 3) **More pad design to keep balance and safety handling**-----Multipoint suction point can ensure the metal sheet high level not run-off the straight when handling the metal sheet.
- 4) **Buzzer and warning light units and vacuum pressure switch** ----- in case of a power failure or vacuum leakage or fails to reach the set pressure, warning unit can control the red warning lights on, At the same time a buzzer sounded, Prompt operator treatment in time.
- 5) **Ball valve control pad in individually**----- Each suction pads are equipped with manual ball valve control opening and close which can ensure a same equipment can handle various specifications plate.
- 6) **Spring cushion**----- Suction pad rod up and down each be equipped with a spring cushion, When the plate is uneven, The spring effect buffer action, can make the suction pad strength evenly , so as to ensure suction and lifting the safe and reliable.
- 7) **Safety factor**---There are 2.0 times safety factor in horizontal

Special advantages different

- 8) **Vacuum pump intermittent start-up (Energy saving, extend the life of the pump)**-----When vacuum reaches to the specified pressure, vacuum pump automatically stops to achieve energy saving; when vacuum pressure is insufficient, it automatically restarts to achieve vacuum compensation.
- 9) **Rotatable design of sucker head**-----Especially for curved plate, better suction and handling to keep balance

3.6 Operational control instructions of vacuum lifter

3.6.1 With board joint:

Control of the driving crane, Make the vacuum lifter move to above of the sheet metal, make the vacuum lifter move to the upper of the sheet material.

3.6.2 Board suction :

To press the power button, the pump is working, Push forward the hand slide-valve, Suction pad began to automatic suction plate. when the vacuum degree reaches requirements more than -60% degrees, meet the suction conditions, the green light is lit up, The warning stop buzzer, Lifting ready.

3.6.3 Board movement :

Control the driving crane movement to the designated position.

3.6.4 Plate release :

To press the safety pin on the hand slide valve, pull back the push-pull valve, plate was released.

3.6.5 Suction pad control respectively :

When the plate length less than the outermost pad distance of two groups, through shut down the manual ball valve on each suction cups. separation from air flow of vacuum system, To prevent the vacuum leak.

