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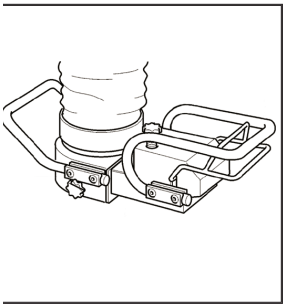
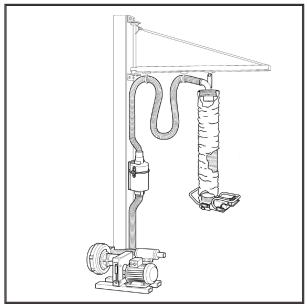
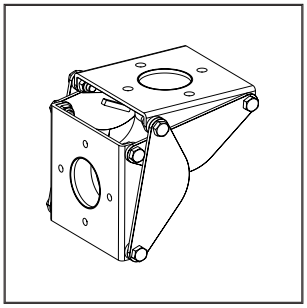
Vaculex VL

Operator's Manual for Vaculex VL

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This product is in accordance with applicable CE directives

1. INTRODUCTION

Vaculex VL is a Swedish invention based on vacuum technology. The lifting aid can be adapted to lift virtually any object – for instance boxes, sacks, panes of glass, sheet metal, stone slabs, drums, barrels, cans, computers and much more. Please contact your local distributor for more detailed information. Vacutrade USA's goal is to make your lifting work easier, with an emphasis on efficiency, ergonomics and safety, but also by being at your service to provide rapid troubleshooting via authorized distributors and our support organization.

The operator's manual contains a description of safety rules, installation, operation, maintenance, troubleshooting and specifications. Custom–made versions of Vaculex VL are not covered. Information about these products is provided by your distributor.
The equipment supplied must only be used for lifting the objects for which it is intended, as described in the quotation and order acknowledgement. If you want to use the lifting unit for other objects, please contact your distributor.

The peripheral equipment in which Vaculex VL is installed is not described in this manual. Please refer to a separate description of each product.

Vacutrade USA constantly endeavours to develop and improve the design and construction of our lifting units. For this reason, we reserve the right to change the design and specifications without prior notice.

All information in the operator's manual was approved for publication at the time it was written, but is provided with reservation for any typographical errors.
Vacutrade USA

Under no circumstances may the design and construction of the vacuum tube lifter be modified without permission from the manufacturer. Always use original accessories/spare parts. Unauthorized modifications and/or non–approved accessories/spare parts can cause serious personal injury during lifting.

2. SAFETY

WARNING!

Operator

- Vaculex VL must only be used by personnel who have read and been able to understand the contents of this manual.
- Never use Vaculex VL when you have used alcohol, other drugs or sleeping pills.

Protective equipment

- Use protective shoes

Loads

- Never handle heavier loads than the equipment is designed for, see page 15.
- Only use Vaculex VL to handle loads which are so strong that there is no risk they could fall apart when lifted.
- Never attach the suction foot on surfaces with loose components, such as address labels or lids that can come off.
- Never attach the suction foot on surfaces that are so slippery that there is a risk that the load could slide off the suction foot.
- Be particularly careful when using Vaculex VL to handle sharp objects.
- Never use Vaculex VL to handle loads containing hazardous or explosive contents without first ensuring that the procedure is risk-free.
- Attach the suction foot above the center of gravity of the lifted object.

Operation

- Vaculex VL with a load must not be operated in such a way that a falling load could risk injuring anybody.
- Never release a lifted load if it risks causing personal injury or damaging the load.
- Never attach the suction foot on a person or an animal.
- Never leave VL with load attached to the suction foot longer than 60 seconds. The vacuum pump will get too hot and may be damaged or cease to function.
- Never try to manually manipulate Vaculex VL in the lifting or lowering cycle.

⚠ Always adjust the balancing height in correspondence to the load.

IMPORTANT INFORMATION

ⓘ Read through the entire manual and get to know the equipment before it is installed and taken into service.

ⓘ The suction foot's area must be at least 2.5 times greater than the lifting hose's cross section area to avoid risk dropping the load, see page 7–10.

ⓘ Operate Vaculex VL with light force on the control handle to avoid jerky movements when lifting.

ⓘ The equipment must be switched off during service and cleaning.

ⓘ Handle the vacuum pump carefully since it is sensitive to impacts and jolts.

ⓘ Never operate the vacuum pump without the air filter in place.

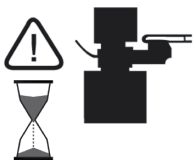
ⓘ The load is not to be lifted until VL and the suspension bridge crane/jib crane are positioned exactly vertically over the load.

Instructions for certifying body

If certifying bodies want to make tests for overload it is higly recommended that they obtain the document "Instructions for certifying body" from Vacutrade USA. Please contact us for the information.

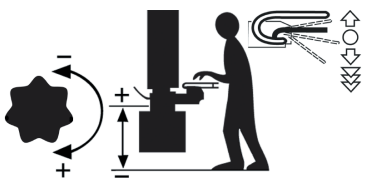
Labels on the control unit

Operate Vaculex VL with light force on the control handle to avoid jerky movements when lifting.

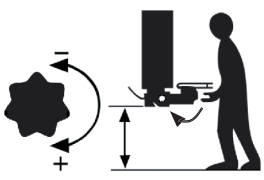


Never let the load hang longer than it takes to complete the lift. Maximum 60 seconds.

Vaculex VL with a load must not be operated in such a way that a falling load could risk injuring anybody.



Balancing with load



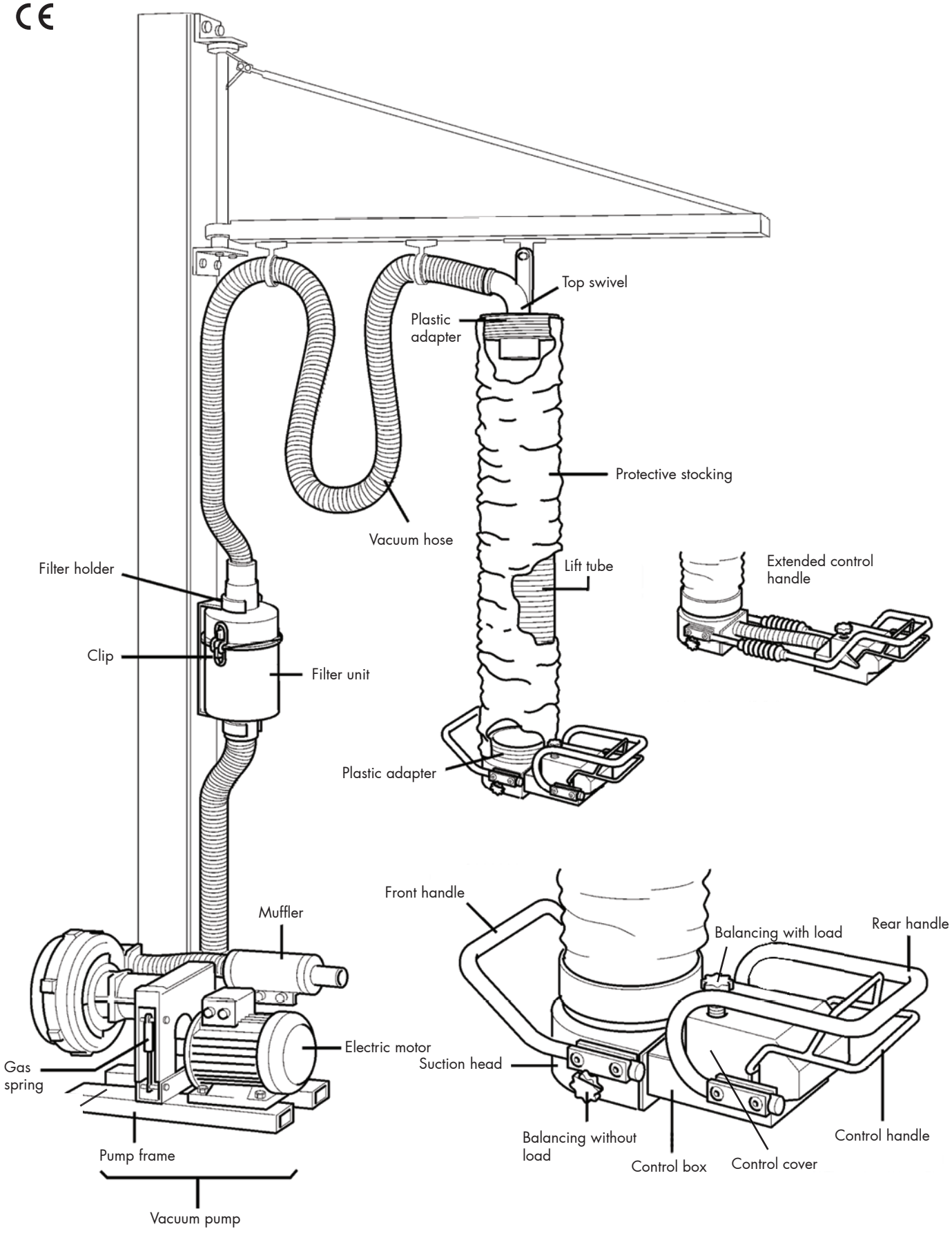
Balancing without load

3. PRODUCT DESCRIPTION

Vaculex VL

03–12–08 ENG

CE



4. SETUP

Make sure that the lifting unit supplied coincides with the dispatch note. If anything is missing, please contact your distributor. Many problems during installation and test run can be avoided if you read the manual throughly before setup. For safety reasons, it is essential that you have complete knowledge of the equipment. Vaculex VL is supplied with an electrically operated vacuum pump. Please observe the instructions.

Safety instructions during setup

⚠ The person responsible for installing the Vaculex VL must ensure that the support system is adequately dimensioned to support the weight of the Vaculex VL equipment itself, its maximum load plus an adequate safety factor.

⚠ A competent electrician must be responsible for the electrical installation.

⚠ Verify by the chart below that the suction foot that will be used with the actual lifting unit attains the safety factor of at least 2.5. The suction foot area must always be at least 2.5 times greater than the lifting hose's cross section area in order to not risk dropping the load.

Find out if the suction foot meets safety regulations

Suction foot		Lift tube Ø 100	120	140	160	180	200
Rectangular							
230 710	150 X 210 mm	4.0	2.8				
210 500	120 X 315 mm	4.8	3.3	2.5			
→ 230 910	95 X 430 mm	5.2	3.6	**2.7**			
210 710	200 X 290 mm	7.4	5.1	3.8	2.9		
210 700	210 X 330 mm	8.8	6.1	4.5	3.4	2.7	
Curved							
210 400	120 X 315 mm	4.8	3.3	2.5			

Safety factor

Example:

To find out the safety factor for the suction foot 230 910 with a lift tube size 140; follow the article number to the right and stop where the lift tube's dimension is 140 on top of the chart.

⚠ The grey areas indicate that such a combination is not allowed for safety reasons.

Find out if the suction foot meets safety regulations

Suction foot		Lift tube Ø					
		100	120	140	160	180	200
Yoke foot 2 feet, adjustable							
230 600	95 x 200 mm. Bar length 500 mm.	4.8	3.4	2.5			
230 610	95 x 200 mm. Bar length 800 mm	4.8	3.4	2.5			
230 620	95 x 200 mm. Bar length 1200 mm	4.8	3.4	2.5			
230 630	95 x 200 mm. Bar length 1800 mm	4.8	3.4	2.5			
210 600	120 x 315 mm. Bar length 500 mm	9.6	6.7	4.9	3.8	3.0	
210 610	120 x 315 mm. Bar length 800 mm	9.6	6.7	4.9	3.8	3.0	
210 620	120 x 315 mm. Bar length 1200 mm	9.6	6.7	4.9	3.8	3.0	
210 630	120 x 315 mm. Bar length 1800 mm	9.6	6.7	4.9	3.8	3.0	
230 602	150 x 210 mm. Bar length 500 mm	8.0	5.6	4.1	3.1	2.5	
230 617	150 x 210 mm. Bar length 800 mm	8.0	5.6	4.1	3.1	2.5	
230 622	150 x 210 mm. Bar length 1200 mm	8.0	5.6	4.1	3.1	2.5	
230 631	150 x 210 mm. Bar length 1800 mm	8.0	5.6	4.1	3.1	2.5	
210 602	200 x 290 mm. Bar length 500 mm	14.8	10.3	7.5	5.8	4.6	3.7
210 617	200 x 290 mm. Bar length 800 mm	14.8	10.3	7.5	5.8	4.6	3.7
210 622	200 x 290 mm. Bar length 1200 mm	14.8	10.3	7.5	5.8	4.6	3.7
210 631	200 x 290 mm. Bar length 1800 mm	14.8	10.3	7.5	5.8	4.6	3.7

Safety factor

Find out if the suction foot meets safety regulations

Suction foot		Lift tube Ø					
		100	120	140	160	180	200
Yoke foot 4 feet, adjustable							
230 614	95 x 200 mm. Bar length 800 mm	9.7	6.7	4.9	3.8	3.0	
230 624	95 x 200 mm. Bar length 1200 mm	9.7	6.7	4.9	3.8	3.0	
230 634	95 x 200 mm. Bar length 1800 mm	9.7	6.7	4.9	3.8	3.0	
210 614	120 x 315 mm. Bar length 800 mm	19.3	13.4	9.8	7.5	5.9	4.8
210 624	120 x 315 mm. Bar length 1200 mm	19.3	13.4	9.8	7.5	5.9	4.8
Yoke foot 2 feet with individual flexibility, not adjustable							
230 720	120 x 230 mm Width 260 mm Length 230 mm	6.0	4.2	3.1			
Yoke foot 2 feet with individual flexibility, not adjustable							
210 720	120 x 355 mm Width 260 mm Length 355 mm	9.9	6.9	5.1	3.9	3.1	2.5
Cross Yoke foot 4 feet, adjustable							
230 644	95 x 200 mm. Main bar length 1200 mm. Cross bar (2) 600 mm.	9.7	6.7	4.9	3.8	3.0	
230 654	95 x 200 mm. Main bar length 1800 mm. Cross bar (2) 600 mm.	9.7	6.7	4.9	3.8	3.0	
210 644	120 x 315 mm. Main bar length 1200 mm. Cross bar (2) 600 mm.	19.3	13.4	9.8	7.5	5.9	4.8
210 654	120 x 315 mm. Main bar length 1800 mm. Cross bar (2) 600 mm.	19.3	13.4	9.8	7.5	5.9	4.8
210 646	200 x 290 mm. Main bar length 1200 mm. Cross bar (2) 600 mm.	29.6	20.5	15.1	11.5	9.1	7.4
210 656	200 x 290 mm. Main bar length 1800 mm. Cross bar (2) 600 mm.	29.6	20.5	15.1	11.5	9.1	7.4

Safety factor

Find out if the suction foot meets safety regulations

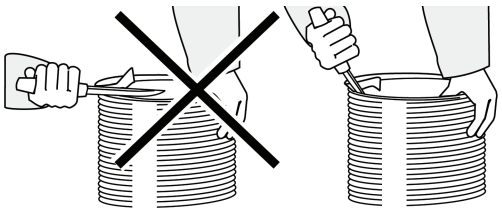
Suction foot		Lift tube Ø 100	120	140	160	180	200
In line, adjustable							
230 603	95 x 200 mm. Bar length is 500 mm. (2 feet).	4.8	3.4	2.5			
230 608	95 x 200 mm. Bar length is 800 mm. (2 feet).	4.8	3.4	2.5			
230 625	95 x 200 mm. Bar length is 1200 mm. (2 feet).	4.8	3.4	2.5			
210 603	120 x 315 mm. Bar length is 500 mm. (2 feet).	9.6	6.7	4.9	3.8	3.0	
210 608	120 x 315 mm. Bar length is800 mm. (2 feet).	9.6	6.7	4.9	3.8	3.0	
210 625	120 x 315 mm. Bar length is1200 mm. (2 feet)	9.6	6.7	4.9	3.8	3.0	
230 626	95 x 200 mm. Bar length is1200 mm. (4 feet)	9.7	6.7	4.9	3.8	3.0	
230 636	95 x 200 mm. Bar length is1800 mm. (4 feet)	9.7	6.7	4.9	3.8	3.0	
210 626	120 x 315 mm. Bar length is1200 mm. (4 feet)	19.3	13.4	9.8	7.5	5.9	4.8
210 636	120 x 315 mm. Bar length is 800 mm. (4 feet)	19.3	13.4	9.8	7.5	5.9	4.8
Circular							
210 200	Ø 250 mm	4.8	3.4	2.5			
210 211	Ø 300 mm	7.3	5.1	3.7	2.8		
210 220	Ø 320 mm	8.4	5.8	4.3	3.3	2.6	
210 230	Ø 360 mm	10.9	7.6	5.6	4.3	3.4	2.7
Oval							
230 305	175 x 275 mm	3.9	2.7	0.0			
210 305	205 x 370 mm	6.7	4.7	3.4	2.6		
210 315	260 x 455 mm	11.0	7.6	5.6	4.3	3.4	2.8

Safety factor

Installing the lifting unit

- The person responsible for the installation must ensure that the support system (such as a bridge crane) is adequately dimensioned to support the weight of the Vaculex VL equipment itself, its maximum load plus an adequate safety factor.
- The lifting unit is suspended from its suspension ear. Make sure that other suspension attachments are sufficiently dimensioned and that they are secured where applicable.
- When the lift unit is suspended, the suction foot should be 100 mm above the surface of the floor. If the suction foot is closer to the floor, the hose must be shortened or the suspension system must be raised. If the suction foot is further away from the floor, the hose must be lengthened or the suspension system must be lowered.

If the ceiling height is low, the lift tube may have to be cut



Undo the protective sock by the control unit, remove the black tape and unscrew the lift tube from the plastic adapter. Measure the amount the lift tube has to be shortened to give the Vaculex VL the correct height above the ground.

1. Cut the lift tube and cut the steel wire away.
2. Excess fabric and orange tape should be cut away. By using the procedure shown in the illustration, you will be able to do this without having the steel wire escape from the rest of the fabric.
3. Remove approximately 20 mm of orange tape around the steel wire.
4. Remove about 2 turns of the white thread around the cut end.
5. Screw the lift tube back onto the plastic adapter.
6. Then tape around the lift tube and plastic adapter with reinforced tape. The tape should be tightly stretched.

Setup of the electric vacuum pump

- Place the vacuum pump as close to the lifting unit as practically possible in order to minimise the length of the vacuum hose. If Vaculex VL is to lift loads at high speed, it is important that the vacuum hose between the vacuum pump and the lifting unit is not too long. A long vacuum hose reduces the ability of the lifting unit to utilize the capacity of the vacuum pump. We recommend that the length of the hose between the vacuum pump and the lifting unit should not exceed 30 m. If you want to use a longer hose, please contact your distributor.
- The vacuum pump should be installed in a well ventilated area considering the heat given off by the pump. Make sure that the pump is placed with at least 300 mm free space all around, and that there is no risk that any object could block the ventilation holes of the pump.
- If the pump is not installed on the floor, make sure that the pump is adequately secured to ensure that it can not fall down or tip over.
- Make sure the belt shield is mounted.
- A qualified electrician must carry out the electrical installation.
- Remove the cover plug from the vacuum inlet on the pump.
- Never run the pump without having the filter canister connected.
- Check the direction of rotation against the direction arrow on the electric motor and by checking if outlet air is coming from the muffler. The pump can be damaged if it runs in the wrong direction.
- If several Vaculex VL units are to be installed, the vacuum pumps must be marked to make it clear which Vaculex VL each pump is connected to.

Installation of vacuum hose and air filter to vacuum pump

- The air filter should be installed in a position where it is easily accessible and clearly marked to indicate the lifting unit to which it is connected. Start by hanging up the vacuum hose in the suspension system from which the lifting unit is mounted (such as from an overhead crane system).
- Connect the vacuum hose to the lifting unit's top swivel and to the air filter.
  Also connect the vacuum hose between the air filter and the vacuum pump.
  NOTE! The arrow on the air filter should point in the direction of the hose which goes to the vacuum pump.
- Make sure that there is no risk that the vacuum hose could be pinched anywhere along its length, or come into contact with objects which might damage it.

Test operation

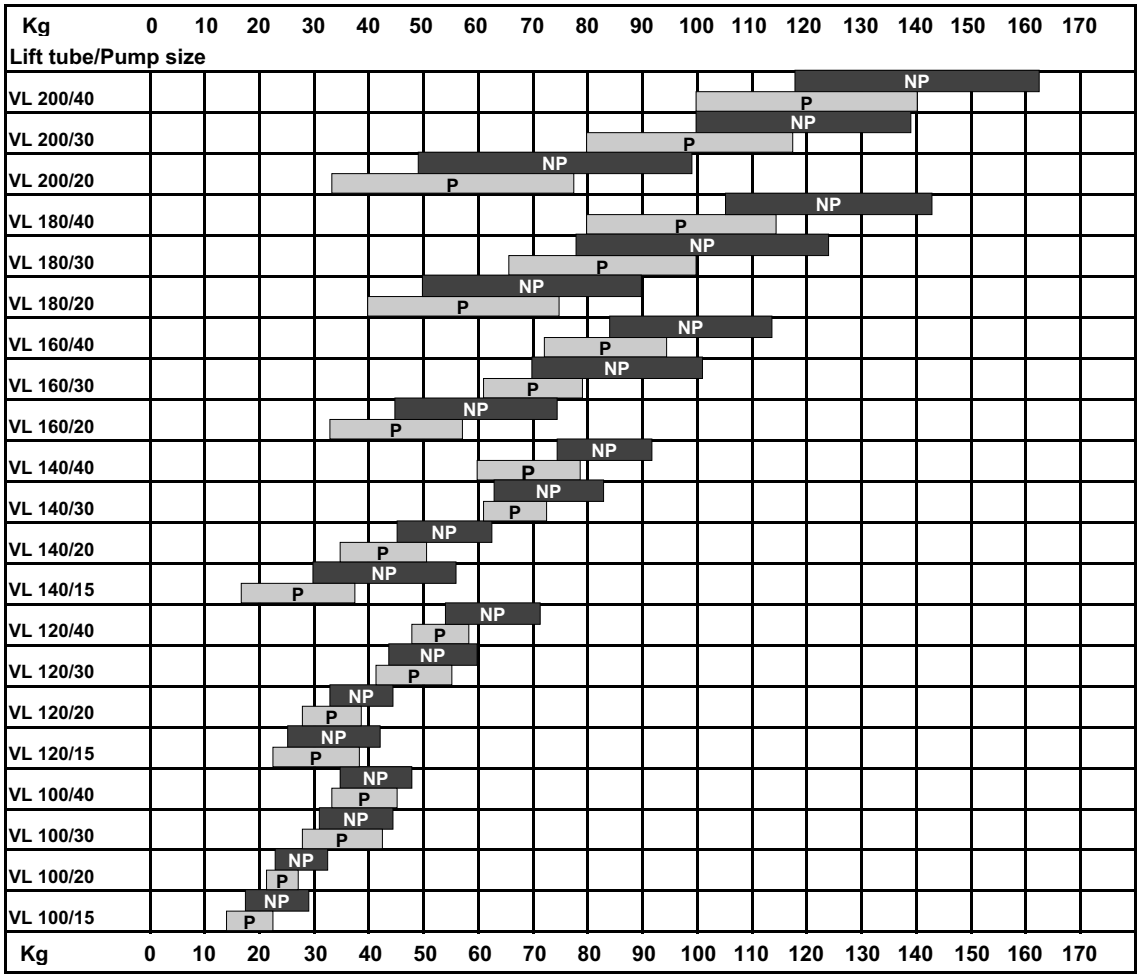
- Lift a load with a fully air–tight surface. Leave the load hanging from the lift and then listen for whistling noises to ensure that there is no leakage anywhere in the installation.
- Inspect the non return valve. Turn on the vacuum pump. Try to lift a light object, about 10 kg/22.2 lbs, with an air–tight surface. Switch off the vacuum pump simultaneously as the control handle is pressed upwards. The Vaculex unit should now descend very slowly due to the non return valve in the swivel. When the lift tube stretches out, an extra depression is created inside the lift tube which gives an additional damping to the descending.
- Lift a load with a fully air–tight surface and the highest permissible load for the installation. Please refer to "Troubleshooting" if the load is not lifted.

Maximum load label

- After having properly installed Vaculex VL in an overhead system, a maximum load label must be put on the control unit. The maximum load must correspond to the maximum load of the Vaculex VL as well as the maximum load of the overhead system. Note that Vaculex does not provide a maximum load label.
  Find out Vaculex VL‘s maximum load in the chart on next page.

Lifting capacity for specific lifting unit/pump combinations

Lifting capacity Kg



10 kg = 22,2 lbs

NP Nonporous load

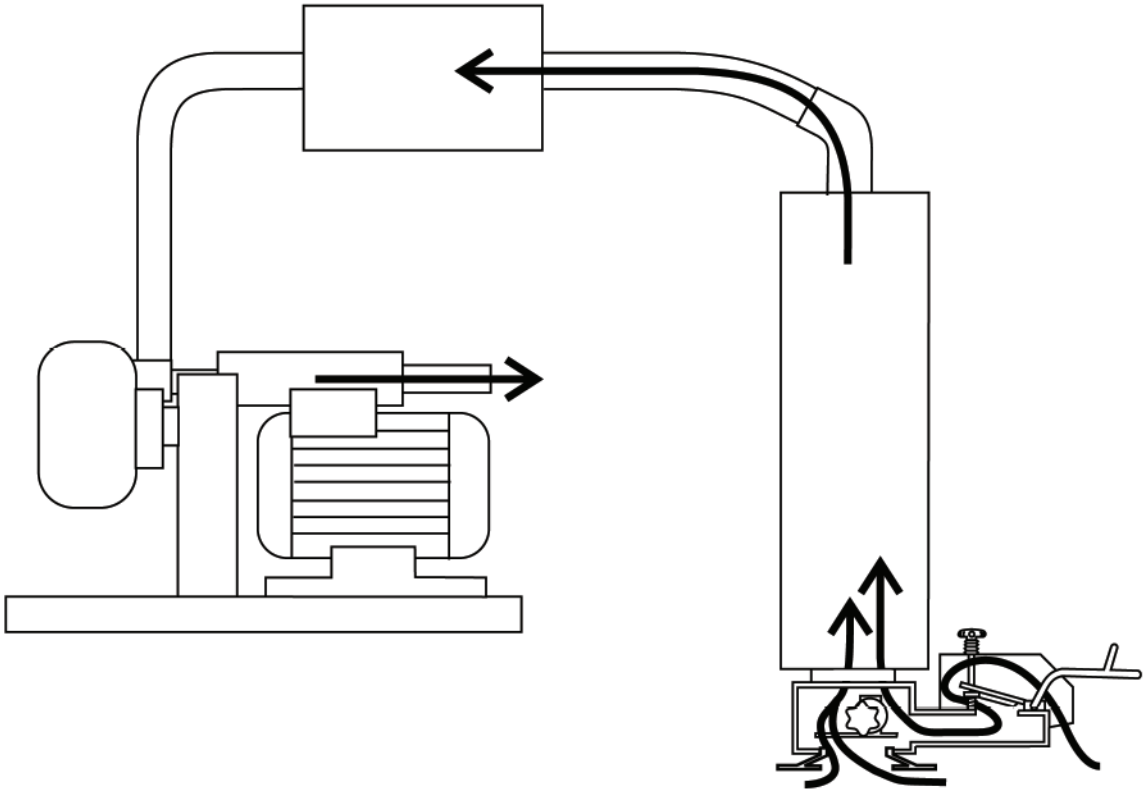
P Porous load

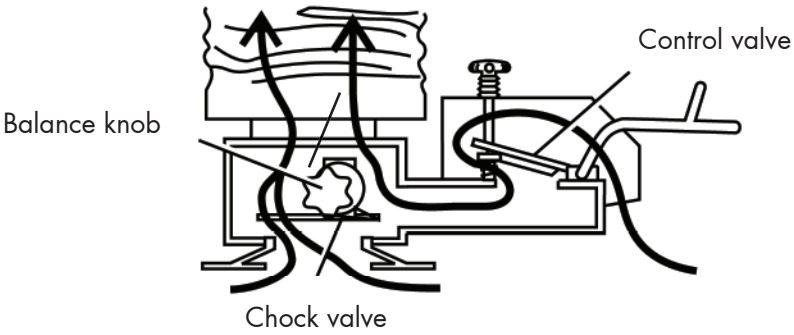
The bars in the diagram show the recommended weights of the loads that can be handled by a specific lifting unit/pump combination. The recommendations are based on suitable lifting speeds. A light load is lifted faster than a heavy load. A nonporous load, NP, (for instance a steel plate) is lifted faster than a porous load, P (for instance a cardboard box). Never use a lifting unit/pump combination for heavier loads than recommended. An example of how to use the diagram:

A Vaculex VL160/30 (lift tube diameter 160 mm, pump size 30) is recommended to lift nonporous loads with weights from 70 kg up to 102 kg and porous loads with weights from 61 kg up to 80 kg.

5. OPERATION

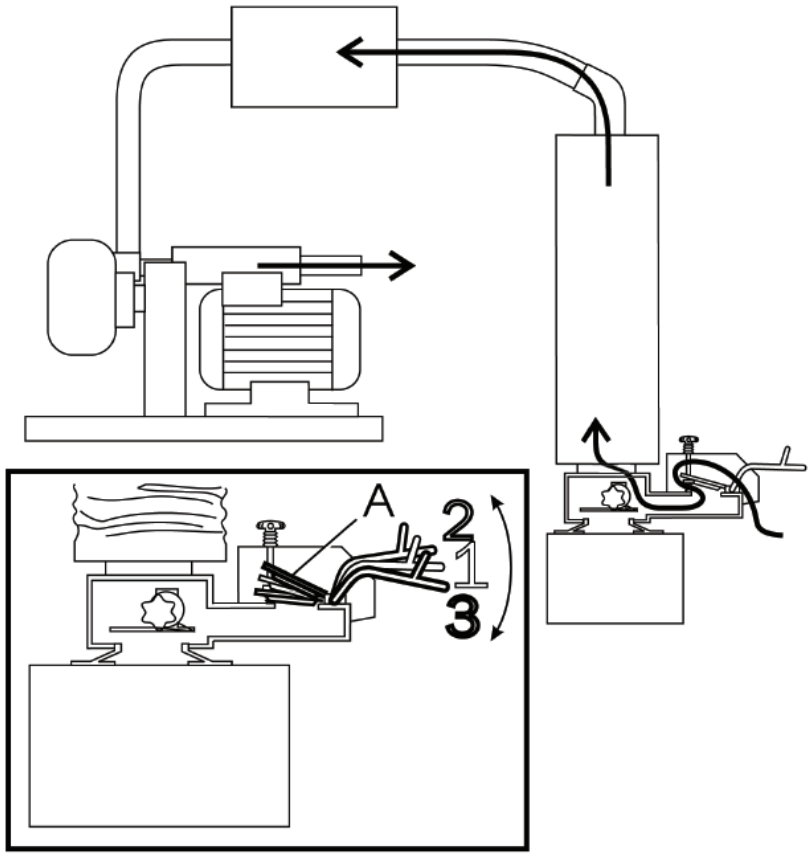
Balancing without load





A depression builds up inside the lifting system when the vacuum pump is in use. To avoid total contraction of the lift tube, air is let in through the chock valve. The air reduces the depression in the lift tube. The amount of air flow is adjusted through the balancing knob.

Operation with load



When the suction foot attaches the load, air is let in through the control valve only.

Control valve in position 1:

A vertical motion has not been obtained. Too much air is let in and the depression in the lift tube is not strong enough to create a lifting force.

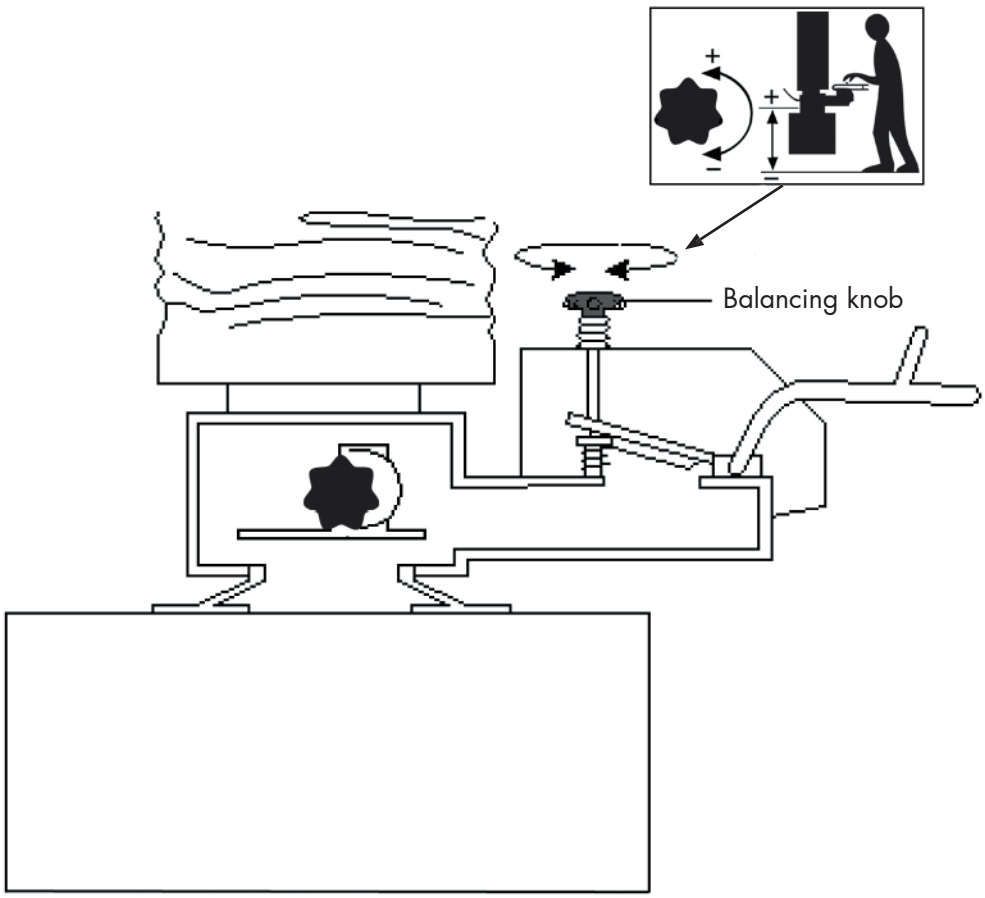
Control valve in position 2:

The valve is air–tight and increases the lift tube's depression. The tube contracts and creates a lifting force.

Control valve in position 3:

Valve A is open. Valve positions from slightly to maximum open increases the amount of air flow which decreases the depression inside the lift tube. The lift tube is extended and the load can be lowered. When valve A is maximum open and the load is placed on a solid surface, the load can be released.

Balancing with load



With the balancing knob the load is adjusted to the desired working height.

Correct balancing gives the possibility to let go of the control handle and handle the load and Vaculex VL sideways with both hands.

When the lifted loads vary in weight, the balancing is adjusted to the average weight.

6. MAINTENANCE

The maintenance instructions must be observed if the equipment is to function safely and not impair the lifting ability. If any fault is discovered in the equipment, this must be attended to at once before the Vaculex VL is taken into service again.

⚠ The installation must be switched off during service work.
⚠ Only use Vaculex VL original spare parts during maintenance and repair work.

Daily maintenance:

• The filter must be checked daily in dusty or dirty environments. Shake the filter off and vacuum clean it. Damaged filters and filters which can not be cleansed must be changed.

Weekly maintenance:

• Test to see that a power failure does not lead to a rapidly sinking load.
  → Start the vacuum pump.
  → Lift a load with a fully air–tight surface, weighing about 10 kg/22.2 lbs.
  → Switch off the vacuum pump simultaneously as the control handle is pressed upwards.
  → The load should now sink slowly to the floor.
  If the load sinks rapidly, the Vaculex VL must not be used until the fault has been rectified. Contact your distributor.
• Check that the filter is not clogged or damaged.
• Check that the suction foot is not damaged.
• Check that the lift tube is not damaged.
• The lift tube elongates over time. Check the lift tube's length and make sure that the suction foot does not reach the floor. Shorten the lift tube if necessary, see page 11.

Every three months:

• Check that the suspension ear and the equipment that the Vaculex VL is suspended from are not damaged. If there is any damage, the Vaculex VL must not be used until the fault has been rectified. Contact your distributor.
• Check that the nuts and bolts in the suspension system are tight and secured where appropriate.
• Check that the vacuum hose and lift tube are air-tight and not chafed or pinched.

7. TROUBLESHOOTING

The load is not lifted or is lifted more slowly than normal

Is the air filter clogged?

Shake the filter off and vacuum clean it. Change the filter if it is damaged.

Is the filter unit lid correctly installed?

Tension the lid correctly.

Is there any leakage in the installation? Attach the suction foot to an air–tight, flat board. Pull the control handle upwards and listen for leakage along the vacuum hose, couplings, air filter, top swivel, lift tube, control unit and suction foot.

Seal leaks or change components which leak.

Is there any debris inside the suction foot?

Remove the rubbish out of the suction foot.

Is the vacuum hose pinched anywhere?

Seal the leakages or change the vacuum hose.

Do the test to see if a power cut makes the load sink rapidly.
(Please refer to “Weekly Maintenance”)

Is the lifting object too heavy? Check if the weight corresponds to Vaculex VL lifting capacity.

If nothing helps, contact your distributor.

ⓘ If the load is not lifted, this could be because no vacuum is generated in the lift tube and/or suction foot. The reason for this is commonly leakage in either the load or the lifting unit.

The load is lifted very slowly at first, but the speed increases as the lift height increases.

Leakage in the lift tube?

Change the lift tube.

Leakage in the vacuum hose?

Seal the leakages or change the vacuum hose.

...TROUBLESHOOTING

The load is not lowered slowly during the power cut test

Please refer to “Weekly Maintenance”.

Contact your distributor for rectification.

The vacuum pump does not start

Contact the person responsible for your electrical installation or your distributor.

Bad noise in the vacuum pump

Contact your distributor.

The non return valve does not function

Change the top swivel unit.

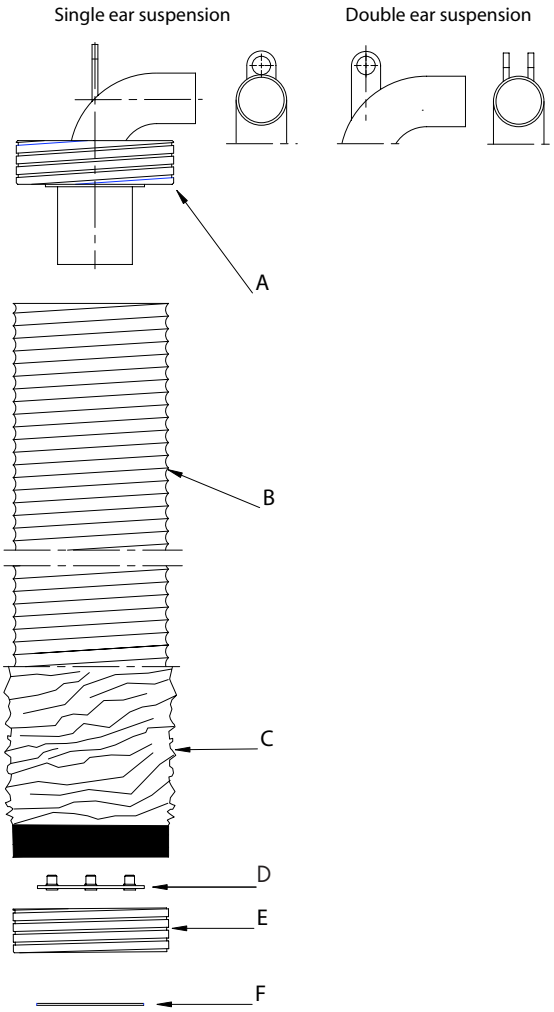
Change the lift tube, see page 11.

Jammed control handle

Inspect and clean the bearings of the control handle.

8. SPECIFICATIONS – Lift tube units

Lift Tube Units Vaculex



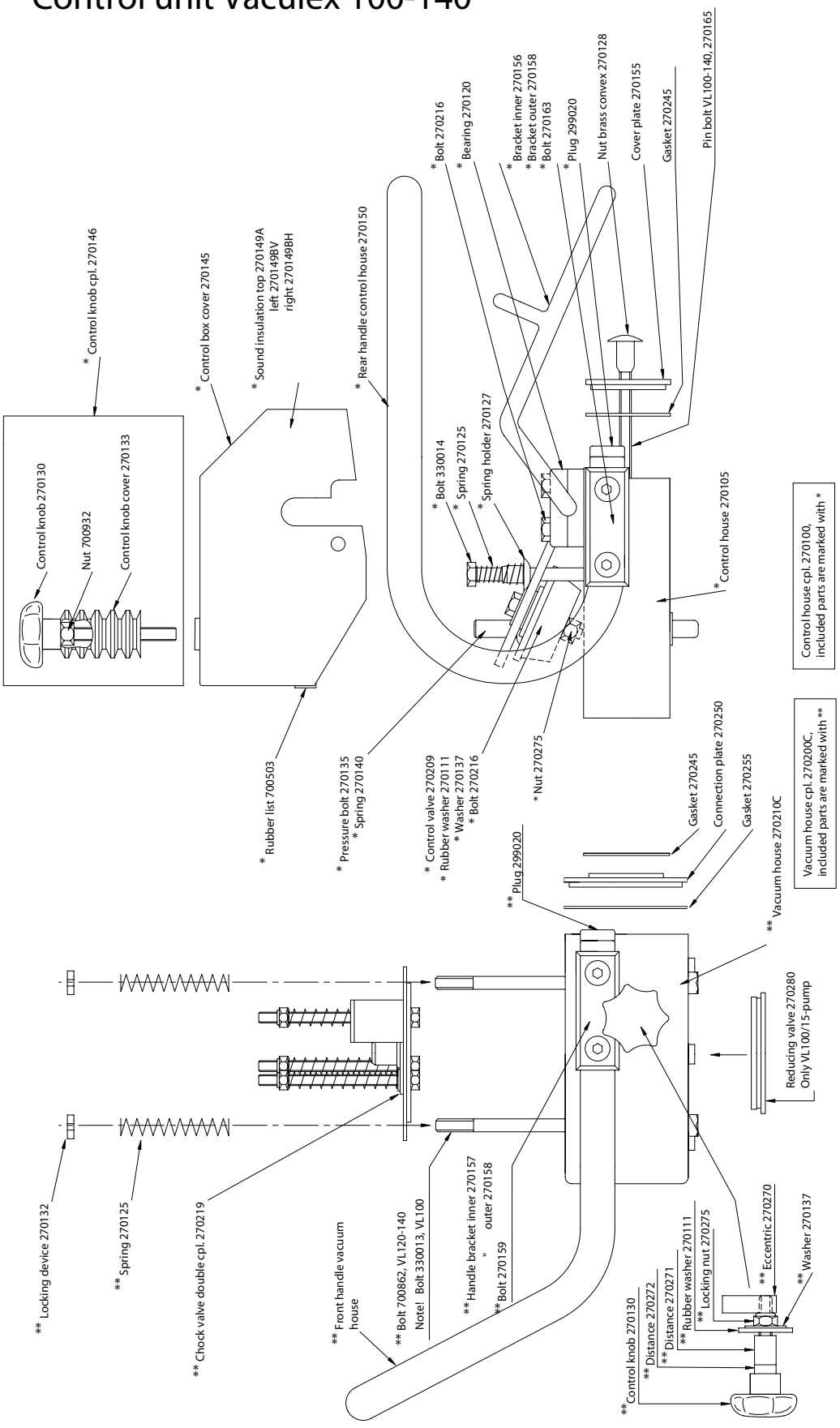
Lift Unit	A) One Ear Suspension	A) One Ear Suspension Stainless	A) Double Ear Suspension	A) Double Ear Suspension Stainless	D) Attachments	D) Stainless	E) Plastic Adapter	F) Gasket
VL 100	280101	282101	280102	282102	----	-------	270401	270290
VL 120	280121	282121	280122	282122	280506	280507	280525	270290
VL 140	280141	282141	280142	282142	280506	280507	280545	270290
VL 160	280161	282161	280162	282162	280506	280507	280565	270290
VL 180	280181	282181	280182	282182	280506	280507	280585	270290
VL 200	280201	282201	280202	282202	280506	280507	280606	270290

Complete Units Including Cover Socks Single Ear Suspension						
Length	VL 100	VL 120	VL 140	VL 160	VL 180	VL 200
2,5 m	290101	290121	290141	290161	290181	290201
3 m	293101	293121	293141	293161	293181	293201
4 m	294101	294121	294141	294161	294181	294201
Complete Units Including Cover Socks Double Ear Suspension						
Length	VL 100	VL 120	VL 140	VL 160	VL 180	VL 200
2,5 m	290102	290122	290142	290162	290182	290202
3 m	293102	293122	293142	293162	293182	293202
4 m	294102	294122	294142	294162	294182	294202
Complete Units Including Cover Socks Single Ear Suspension Stainless						
Length	VL 100	VL 120	VL 140	VL 160	VL 180	VL 200
2,5 m	292101	292121	292141	292161	292181	292201
3 m	298101	298121	298141	298161	298181	298201
4 m	299101	299121	299141	299161	299181	299201
Complete Units Including Cover Socks Double Ear Suspension Stainless						
Length	VL 100	VL 120	VL 140	VL 160	VL 180	VL 200
2,5 m	292102	292122	292142	292162	292182	292202
3 m	298102	298122	298142	298162	298182	298202
4 m	299102	299122	299142	299162	299182	299202

B) Lift Tubes						
Length	VL 100	VL 120	VL 140	VL 160	VL 180	VL 200
2,5 m	250100	250120	250140	250160	250180	250200
3 m	251100	251120	251140	251160	251180	251200
4 m	252100	252120	252140	252160	252180	252200
C) Cover Socks						
Length	VL 100	VL 120	VL 140	VL 160	VL 180	VL 200
2,7 m	257100	257120	257140	257160	257180	257200
3,2 m	257103	257123	257143	257163	257183	257203
4,2 m	257104	257124	257144	257164	257184	257204

Part list		Date
Lift tube units		010418
Drawing number	Revision	Revision made
29XXXX	3	031203

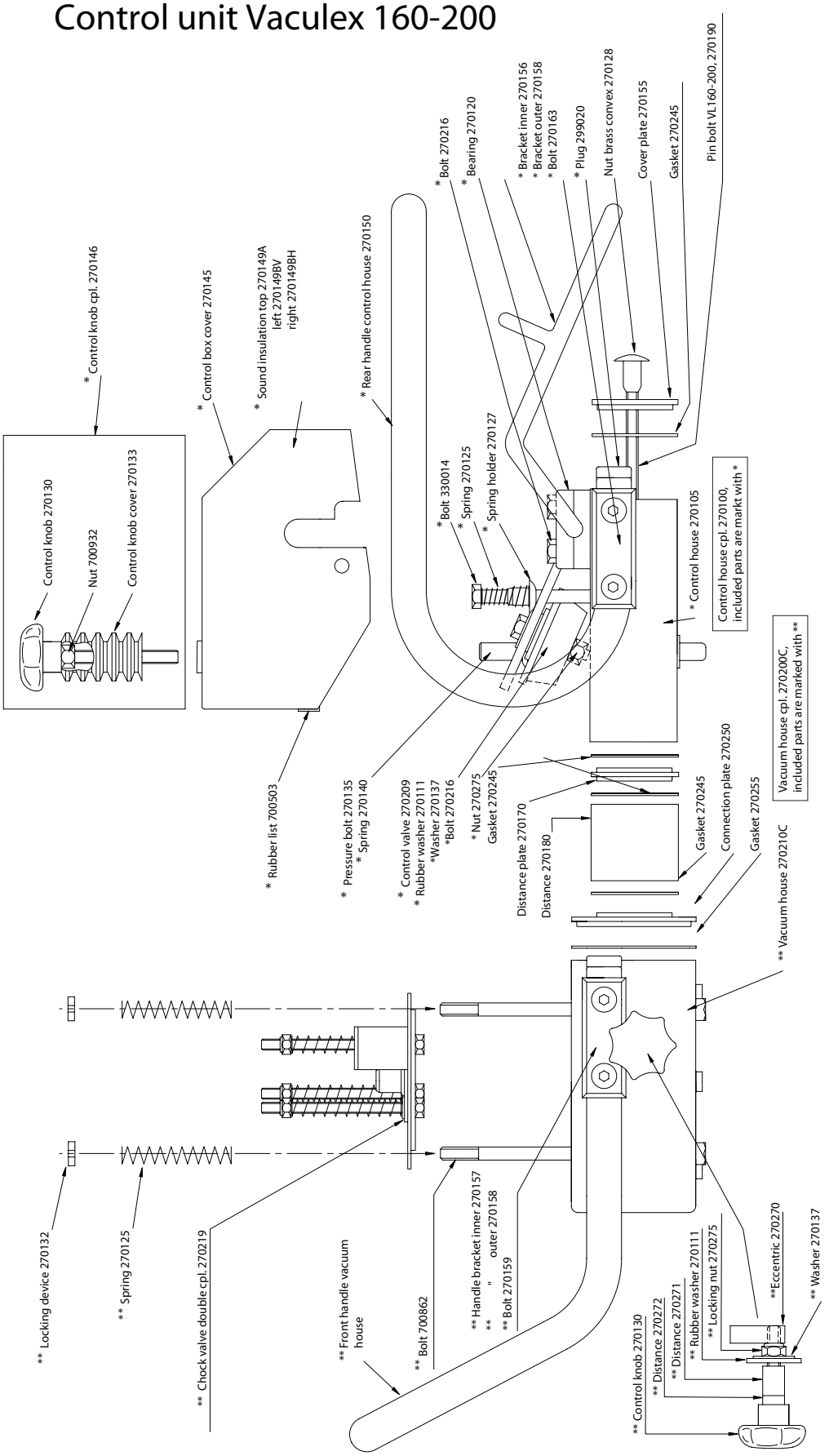
Control unit Vaculex 100-140



Part list		Date
Control unit VL 100-140		991020
Drawing number	Revision	Revision made
105ENG	3	031203

SPECIFICATIONS – Control units

Control unit Vaculex 160-200



Part list		Date
Control unit VL 160-200		991020
Drawing number	Revision	Revision made
106ENG	3	031203

Rigid Extended Handle Complete Unassembled Vaculex 100-200

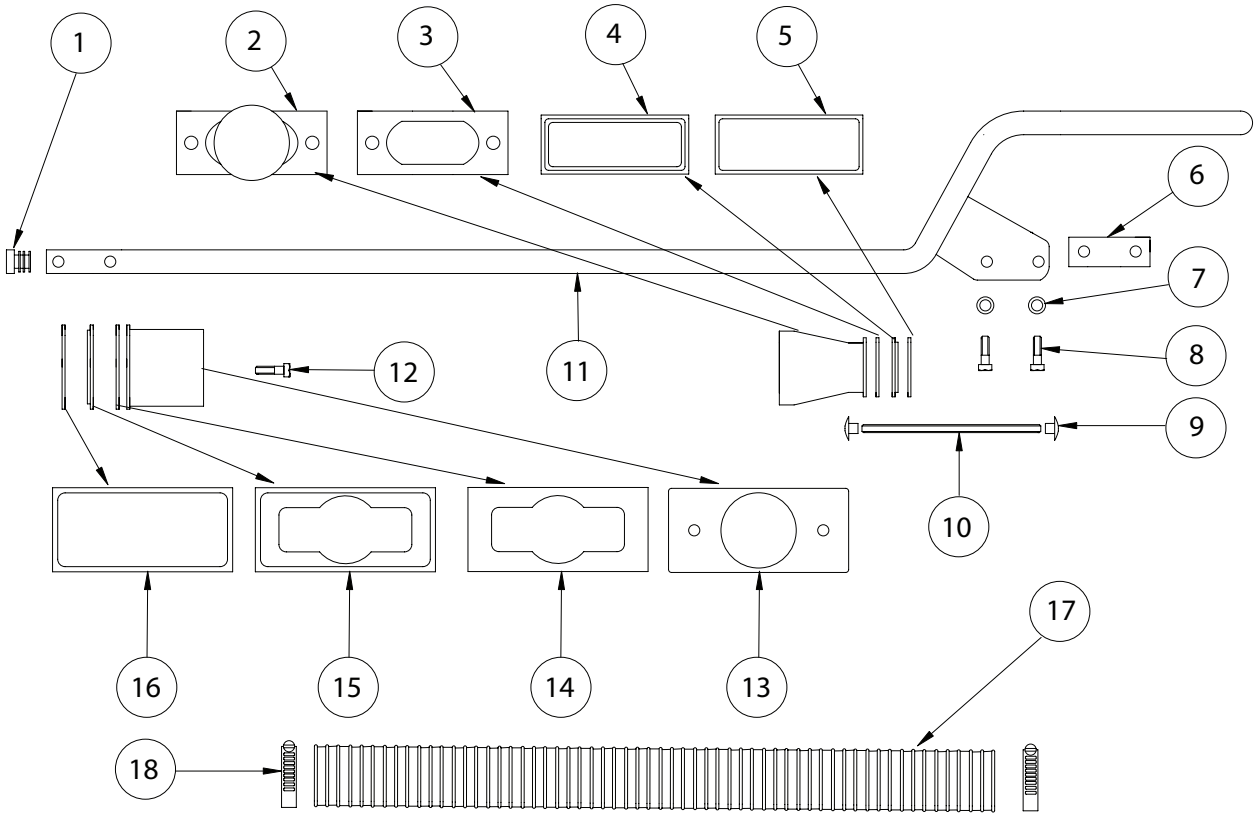


Chart 1

17	1	Hose		250052	See Chart 2
16	1	Gasket	Cork	270255	
15	1	Connection plate	Alumin.	270171	
14	1	Gasket	Cork	270172	
13	1	Hose connection	Panel	270262	
12	2	Bolt		270218	M6x20
11	1	Handle			See Chart 2
10	2	Pin bolt		270166	M6x119
9	4	Nut, convex	Brass	270128	M6
8	4	Bolt		270225	M6x35
7	4	Washer		270141	M6
6	2	Bracket	Plastic	270153	
5	2	Gasket	Cork	270245	
4	1	Connection plate	Alumin.	270251	
3	1	Gasket	Cork	270252	
2	1	Hose connection	Panel	270263	
1	2	Plug	Plastic	299020	

Chart 2

Art.No. Rigid Extended Handle Complete	Art.No. Handle A	Art.No. Hose B	Length of Hose C
244005 (500 mm)	244005A	250052	500 mm
244006 (600 mm)	244006A	250052	600 mm
244007 (700 mm)	244007A	250052	700 mm
244009 (900 mm)	244009A	250052	900 mm
244012 (1200 mm)	244012A	250052	1200 mm
24400A (Free length without balancer)	Special number	250052	Individual
24400C (Free length with balancer)	Special number	250052	Individual

Part list		Date
Rigid extended handle cpl. unassembled VL 100-200		010201
Drawing number	Revision	Revision made
104ENG	2	010201

Flexible Extended Handle Complete Unassembled Vaculex 100-200

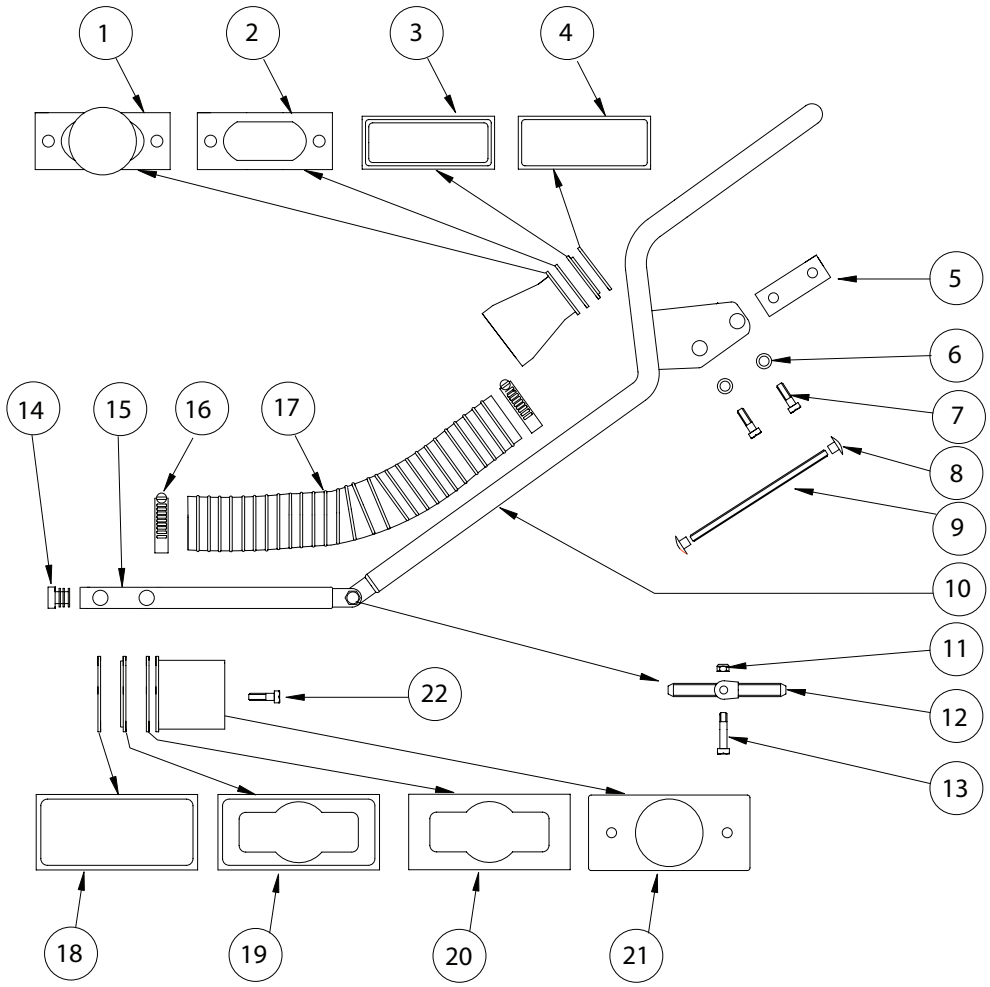


Chart 1

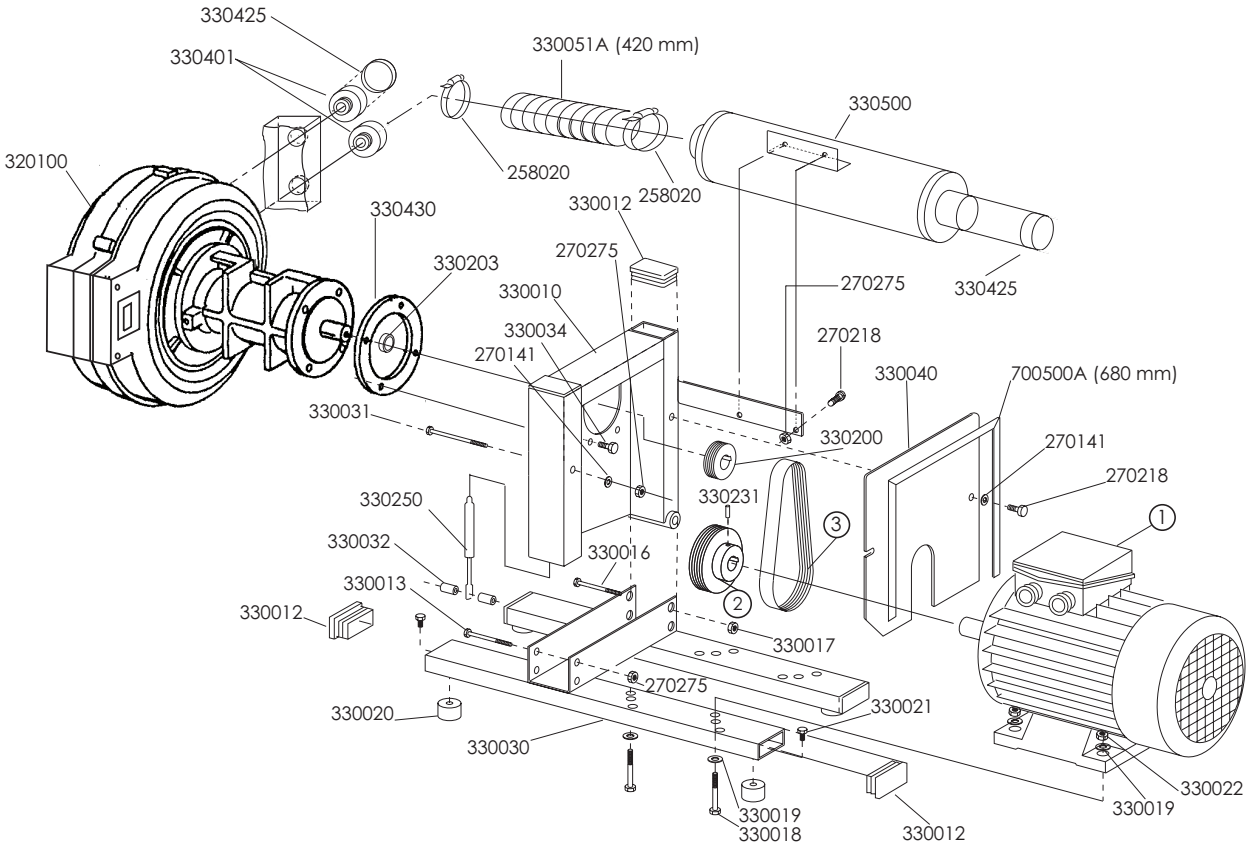
Art.No. Flexible Handle Cpl.	Art.No. Rigid Part (A)	Art.No. Flexible Part (B)	Art.No. Hose (C)	Hose Length (D)
244025 (200 + 500 mm)	244462	244500	330050	390 mm
244026 (200 + 600 mm)	244462	244800	330050	490 mm
244027 (200 + 700 mm)	244462	244850	330050	590 mm
244029 (200 + 900mm)	244462	244870	330050	790 mm
244035 (300 + 500 mm)	244463	244500	330050	490 mm
244036 (300 + 600 mm)	244463	244800	330050	590 mm
244037 (300 + 700 mm)	244463	244850	330050	690 mm
244039 (300 + 900mm)	244463	244870	330050	890 mm
244045 (400 + 500 mm)	244464	244500	330050	590 mm
244046 (400 + 600 mm)	244464	244800	330050	690 mm
244047 (400 + 700 mm)	244464	244850	330050	790 mm
244049 (400 + 900mm)	244464	244870	330050	990 mm
244055 (500 + 500 mm)	244465	244500	330050	690 mm
244056 (500 + 600 mm)	244465	244800	330050	790 mm
244057 (500 + 700 mm)	244465	244850	330050	890 mm
244059 (500 + 900 mm)	244465	244870	300050	1090 mm
244075 (700 + 500 mm)	244467	244500	330050	890 mm
244076 (700 + 600 mm)	244467	244800	330050	990 mm
244077 (700 + 700 mm)	244467	244850	330050	1090 mm
244079 (700 + 900 mm)	244467	244870	330050	1290 mm
24400B (up to 1200 mm)			330050	Individual

Chart 2

22	2	Bolt		270218	M6 x 20
21	1	Hose connection	Panel	270262	
20	1	Gasket	Cork	270172	
19	1	Connection plate	Alumin.	270171	
18	1	Gasket	Cork	270255	
17	1	Hose		330050	See Chart 1
16	2	Hose clamp		258020	44-56 Zink Plated
15	2	Handle rigid			See Chart 1
14	2	Plug	Plastic	299020	
13	2	Bolt		244900A	M6 x 28
12	2	Hinge		244900	
11	2	Locking nut		270275	M6
10	1	Handle flexible			See Chart 1
9	2	Pin bolt		270166	M6 x 119
8	4	Nut, convex	Brass	270128	M6
7	4	Bolt		270225	M6 x 35
6	4	Washer		270141	M6
5	2	Bracket	Plastic	270153	
4	2	Gasket	Cork	270245	
3	1	Connection plate	Alumin.	270251	
2	1	Gasket	Cork	270256	
1	1	Hose connection	Panel	270263	

Part list		Date
Flexible extended handle cpl. unassembled VL 100-200		010515
Drawing number	Revision	Revision made
103ENG	3	010515

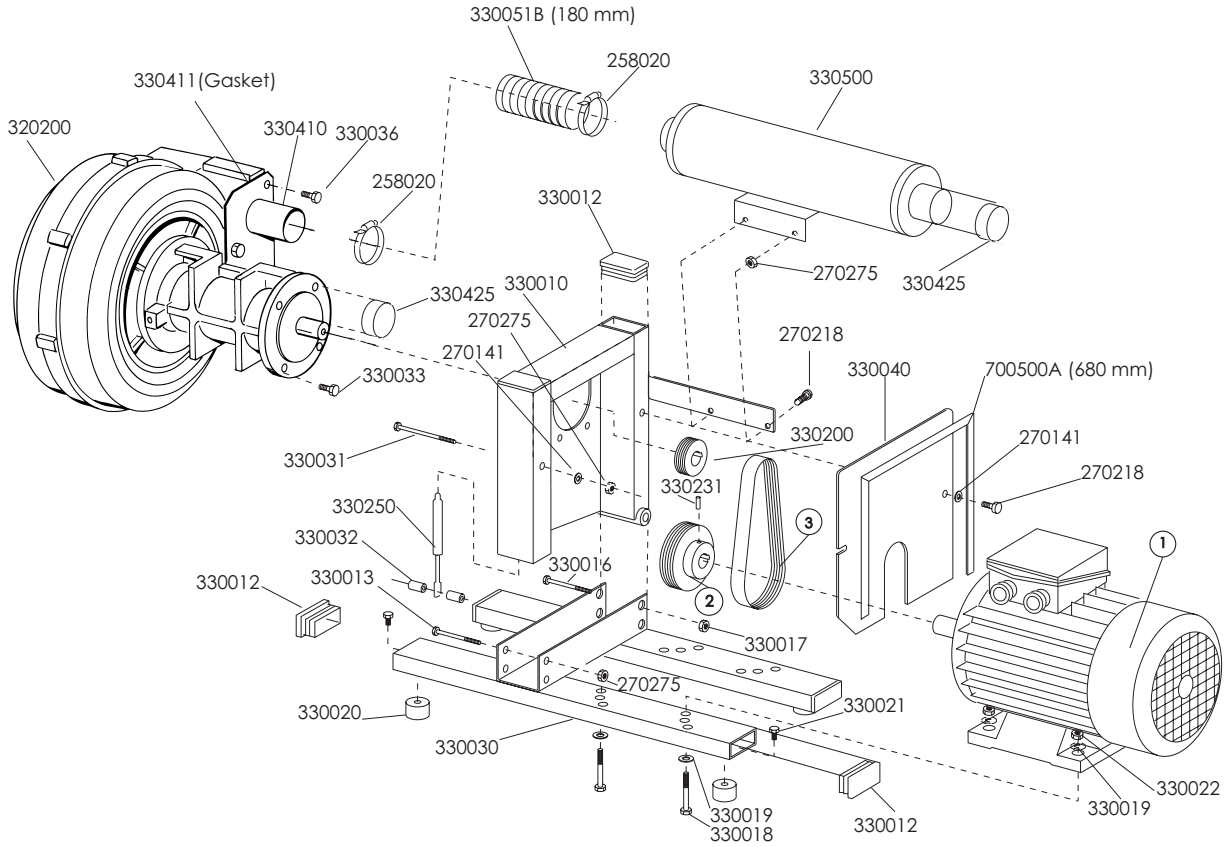
Pump Unit: 15-Pump



Pump unit	Electrical Data Three Phase Motor								Mechanical data				
	Frequency (Hz)	Connection	Voltage (V)		Current (A) at max power output	Starting current (A)	Max power output (kW)	Duty type according to DIN VDE 0530	Motor (1)	Motor Pulley (2)	Dimension	Belt (3)	Dimension
300152	50	Δ	min	200	8.1	35,6	1.9	S6 60% 10 min	310101	330210	112x24	330130	220 J8
			max	-	-	-							
301152	50	Δ	min	220	7.4	32.5	1.9	S6 60% 10 min	310110	330210	112x24	330130	220 J8
			max	240	6.8	29.8							
302152	50	Y	min	380	4.3	18.8	1.9	S6 60% 10 min	310110	330210	112x24	330130	220 J8
			max	420	3.9	17.0							
303152	60	Δ	min	200	8.1	35.8	1.9	S6 60% 10 min	310111	330180	90x24	330120	200 J8
			max	220	7.4	32.5							
304152	60	Δ	min	255	6.4	28.0	1.9	S6 60% 10 min	310112	330180	90x24	330120	200 J8
			max	275	5.9	26.0							
305152	60	Y	min	440	3.7	16.3	1.9	S6 60% 10 min	310112	330180	90x24	330120	200 J8
			max	480	3.4	14.9							

Part list		Date
Pump unit 15-pump		031203
Drawing number	Revision	Revision made
30X152	5	031203

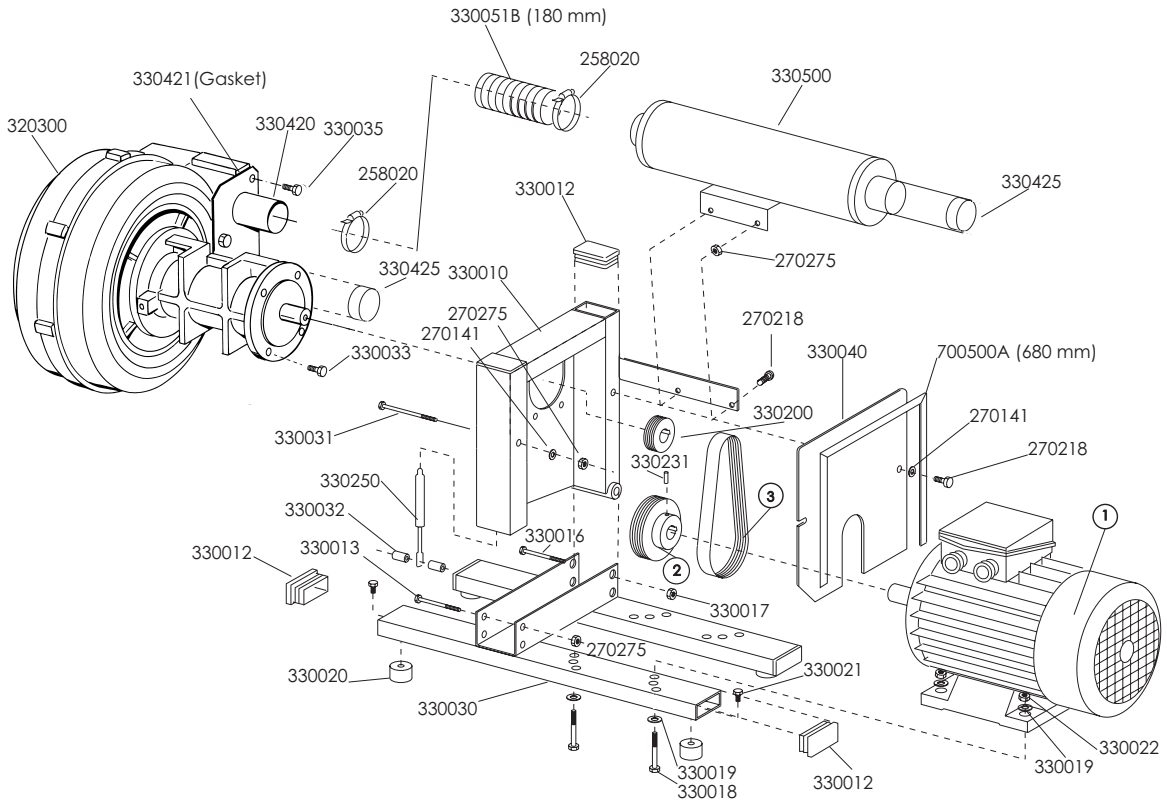
Pump Unit: 20-Pump



Pump unit	Electrical Data Three Phase Motor								Mechanical data				
	Frequency (Hz)	Connection	Voltage (V)		Current (A) at max power output	Starting current (A)	Max power output (kW)	Duty type according to DIN VDE 0530	Motor (1)	Motor Pulley (2)	Dimension	Belt (3)	Dimension
300203	50	Δ	min	200	10.5	57.3	2.5	S6 60% 10 min	310201	330210	112x24	330130	220 J8
			max	-	-	-							
301203	50	Δ	min	220	9.5	52.1	2.5	S6 60% 10 min	310210	330210	112x24	330130	220 J8
			max	240	8.8	47.8							
302203	50	Y	min	380	5.5	30.2	2.5	S6 60% 10 min	310210	330210	112x24	330130	220 J8
			max	420	5.0	27.3							
303203	60	Δ	min	200	10.5	57.3	2.5	S6 60% 10 min	310211	330180	90x24	330120	200 J8
			max	220	9.5	52.1							
304203	60	Δ	min	255	8.2	45.0	2.5	S6 60% 10 min	310212	330180	90x24	330120	200 J8
			max	275	7.6	41.7							
305203	60	Y	min	440	4.7	26.0	2.5	S6 60% 10 min	310212	330180	90x24	330120	200 J8
			max	480	4.4	23.9							

Part list		Date
Pump unit 20-pump		031203
Drawing number	Revision	Revision made
30X203	6	031203

Pump Unit: 30-Pump

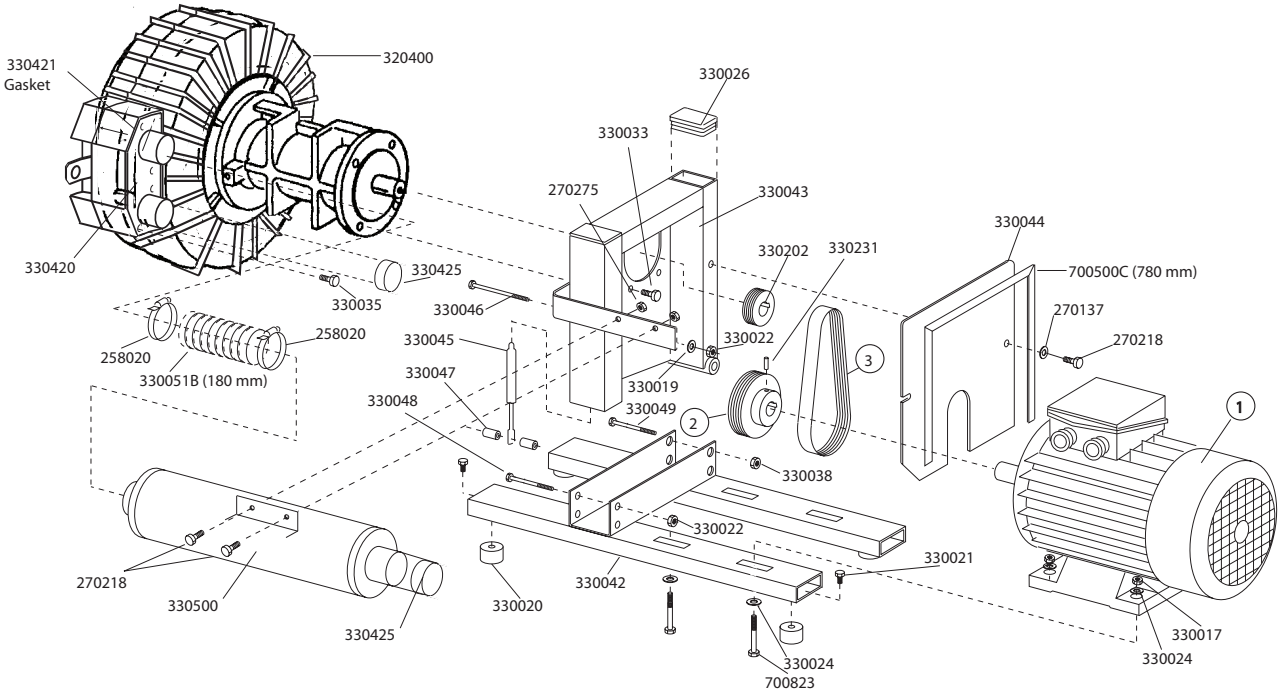


Pump unit	Electrical Data Three Phase Motor								Mechanical data				
	Frequency (Hz)	Connection	Voltage (V)		Current (A) at max power output	Starting current (A)	Max power output (kW)	Duty type according to DIN VDE 0530	Motor (1)	Motor Pulley (2)	Dimension	Belt (3)	Dimension
300304	50	Δ	min	200	18.8	83.0	4.6	S6 40% 10 min	310309	330220	112x28	330120	200 J8
			max	-	-	-							
301304	50	Δ	min	220	17.1	75.4	4.6	S6 40% 10 min	310313	330220	112x28	330120	200 J8
			max	240	15.7	69.1							
302304	50	Y	min	380	9.9	43.7	4.6	S6 40% 10 min	310313	330220	112x28	330120	200 J8
			max	420	9.0	39.5							
303304	60	Δ	min	200	18.8	83.0	4.6	S6 40% 10 min	310311	330190	90x28	330120	200 J8
			max	220	17.1	75.4							
304304	60	Δ	min	255	14.7	65.1	4.6	S6 40% 10 min	310314	330190	90x28	330120	200 J8
			max	275	13.7	60.3							
305304	60	Y	min	440	8.5	37.7	4.6	S6 40% 10 min	310314	330190	90x28	330120	200 J8
			max	480	7.8	34.6							

Part list		Date
Pump unit 30-pump		031203
Drawing number	Revision	Revision made
30X304	6	031203

SPECIFICATIONS –Pump units

Pump Unit: 40-Pump

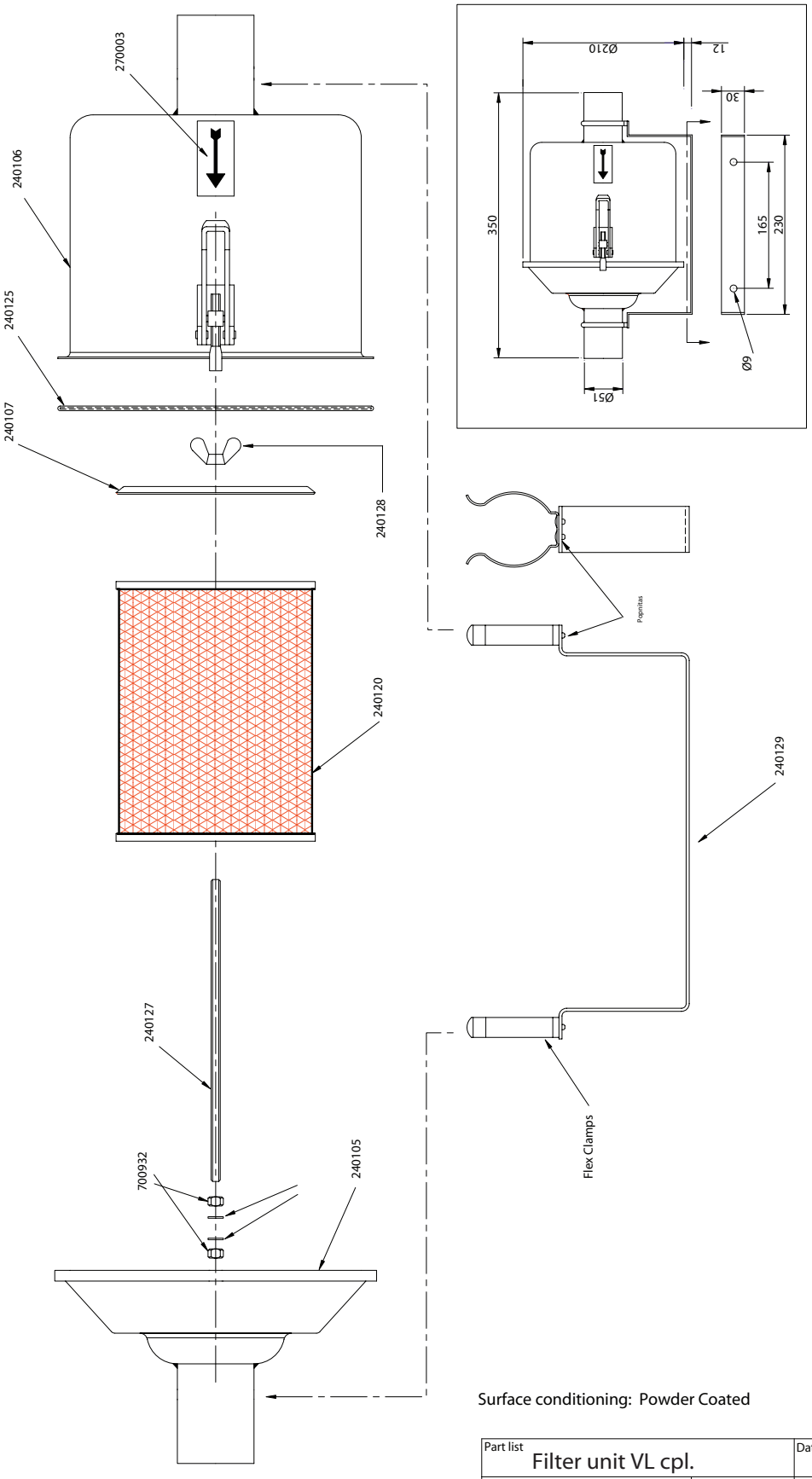


Pump unit	Electrical Data Three Phase Motor								Mechanical data				
	Frequency (Hz)	Connection	Voltage (V)		Current (A) at max power output	Starting current (A)	Max power output (kW)	Duty type according to DIN VDE 0530	Motor (1)	Motor Pulley (2)	Dimension	Belt (3)	Dimension
300405	50	Δ	min	200	26.4	121.5	7.1	S6 60% 10 min	310435	330221	112X38	330130	220 J8
			max	-	-	-							
301405	50	Δ	min	220	24.0	110.5	7.1	S6 60% 10 min	310433	330221	112X38	330130	220 J8
			max	240	22.0	101.3							
302405	50	Y	min	380	13.9	64.0	7.1	S6 60% 10 min	310433	330221	112X38	330130	220 J8
			max	420	12.6	57.9							
303405	60	Δ	min	200	26.4	121.5	7.1	S6 60% 10 min	310436	330191	90X38	330120	200 J8
			max	220	24.0	110.5							
304405	60	Δ	min	255	20.7	95.3	7.1	S6 60% 10 min	310434	330191	90X38	330120	200 J8
			max	275	19.2	88.4							
305405	60	Y	min	440	12.0	55.2	7.1	S6 60% 10 min	310434	330191	90X38	330120	200 J8
			max	480	11.0	50.6							

Part list		Date
Pump unit 40-pump		031203
Drawing number	Revision	Revision made
30X405	5	031203

SPECIFICATIONS – Filter unit

Filter Unit Vaculex Standard Complete



Surface conditioning: Powder Coated

Part list		Date
Filter unit VL cpl.		990328
Drawing number	Revision	Revision made
240100	3	990328

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