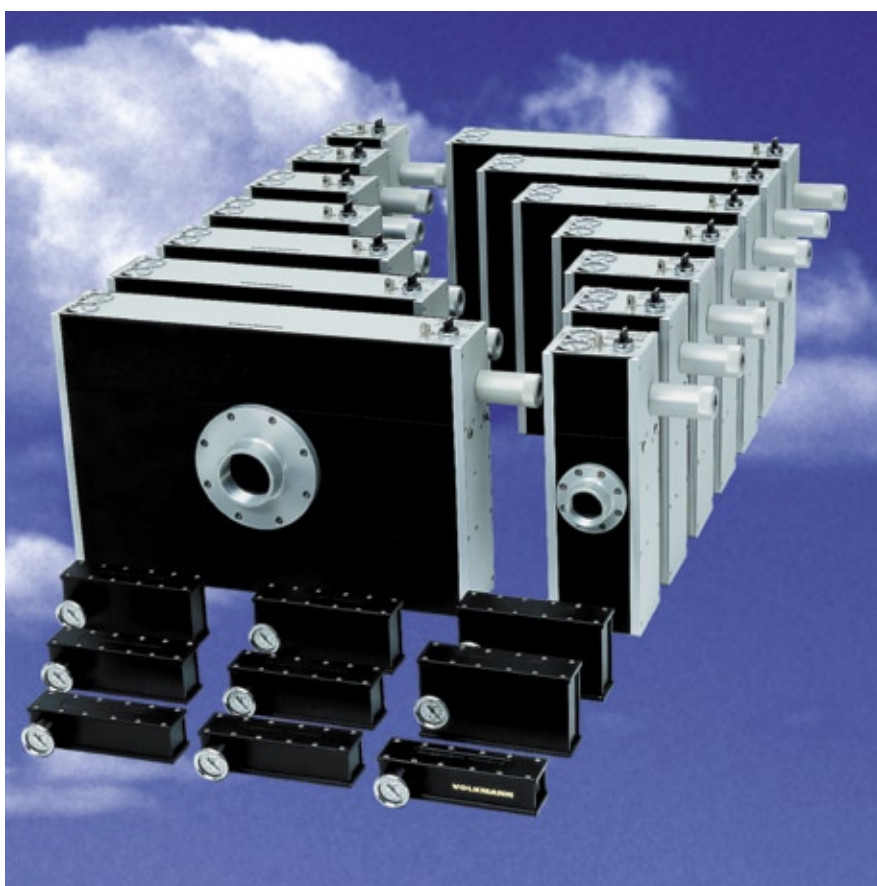


# MULTIJECTOR®

## Vacuum Pumps and Vacuum Components





**Vacuum by pressure.**

VOLKMANN has been successfully supplying Vacuum Pumps, designed to suit a wide range of vacuum applications, for more than 30 years. The basis of this success has been the continuous development and innovative approach taken to satisfy the ever increasing variety of applications and special technical requirements demanded. This has resulted in many solutions which help to save the user time and costs.

The Volkmann MULTIJECTOR® series of vacuum pumps contains various pump types which have been designed specifically to suit the wide range of different duties which present themselves and the new generation MULTIJECTOR® models of the M, G, K and RVA types have set new benchmarks in relation to economy, quality and cost-performance-ratio.

Take a look by yourself and use this brochure to get a brief overview on the Volkmann Multijector Vacuum Pumps and how to use them in your vacuum applications.

Talk to us about your special needs in the field of Vacuum Components.

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## Reliable and experienced

MULTIJECTOR® Vacuum Pumps have been established in many applications and their high reliability in achieving the specified duties in these applications, has been proven not only for simple duties, but also and especially, in critical production areas.

Multijectors are not subject to wear, are very robust and are virtually maintenance-free. They are backed by the VOLKMANN professional service, which brings considerable know-how directed towards providing a clear solution for each application. It offers fast response times, solutions which are the most cost effective and user-friendly information. In addition, this service offers to develop and manufacture tailor-made pumps and to design complete vacuum systems.



**VOLKMANN – vacuum handling unlimited.**

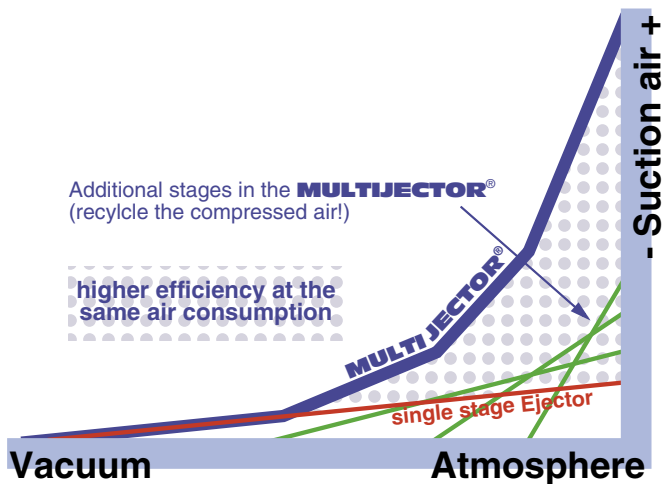
# How a MULTIJECTOR works

## The classical Ejector (Venturi)...

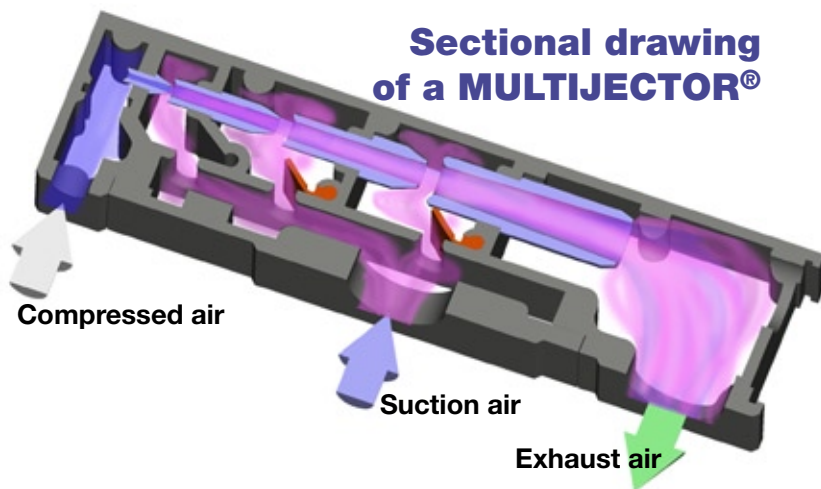
Compressed air driven vacuum pumps have a lot of advantages over alternative pump designs such as small size, low weight, simple construction, as well as wear and virtually maintenance free operation. The control system is operated entirely by pneumatics off the compressed air supply, which enables the pump to be used safely in hazardous areas. The pumps are quiet in operation and do not emit either heat or dust or cause vibration.

But how to make a Venturi more efficient and economic?

A look at the diagram below indicates how the MULTIJECTOR works: A classical Ejector consists of a primary nozzle (injector), a mixing chamber and a diffuser. Compressed air is supplied through the primary nozzle, expands quickly, entrains air in the mixing chamber and leaves the pump into the surroundings through a diffuser.



## Schematic characteristic line of a MULTIJECTOR® Vacuum Pump



## ... the multiple stage MULTIJECTOR®

Volkman Multijectors use multiple ejector stages, which save compressed air and reduce running costs.

When additional nozzles are built behind the diffuser, the air ejecting from the first stage, (which consists of compressed air mixed with the suction air induced by the venturi effect), serves the following stage as a „free“ propulsion jet, which does likewise for subsequent stages. These additional stages do not reach the high vacuum of the first stage, but they vastly enlarge the effective suction capacity, at reduced vacuum, for no additional compressed air usage. However, the vacuum pump can still achieve the same high vacuum as the first Ejector stage because the following stages are actually separated from the common vacuum chamber by flap valves, which close off if the suction requirement increases. This particular nozzle geometry and flow guidance makes it possible for the MULTIJECTORS to be very efficient, for minimum compressed air usage.

## Further advantages of Volkman MULTIJECTOR® Vacuum Pumps

Because of the sophisticated construction, the Multijectors work very quietly and the higher the vacuum the more quietly the pump works. Hence ear protection is not required. In addition, as the gas jet expands in the MULTIJECTOR, a cooling effect is generated, instead of heat, and there is, therefore, no warming of the area of operation.

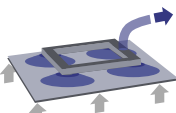
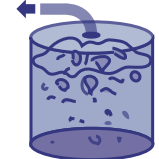
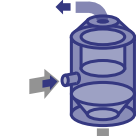
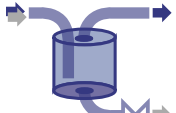
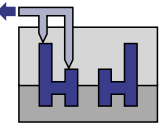
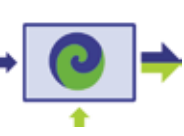
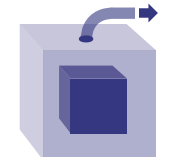
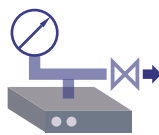
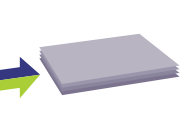
A Multijector can be installed easily, in any position and operates completely oil free. The only connections required are the compressed air and the vacuum lines and these connections are quickly and easily made by the plant operator.

As soon as the pump is switched on, vacuum is generated very rapidly and this allows a cyclical operation of the Multijector to be controlled pneumatically, (via air from the compressed air supply), by a 2/2 way solenoid valve. Hence, expensive vacuum on/off valves, with their generally unknown losses (through leakages etc.), can be eliminated.

Small size and the low weight make it possible to mount Multijectors closer to the suction location than other vacuum pumps. This enables a faster vacuum build-up to take place by avoiding unnecessary volumes of air in the vacuum line. Consequently, lower losses and faster response times are achieved. In addition, when a cyclical operation is being used, energy is only consumed during the suction cycle, whereas other vacuum pumps continue to consume energy throughout the complete cycle. An accessory to the vacuum control can also be supplied, which restricts the vacuum and holds it automatically within the adjusted target area, thus further reducing the energy costs.

A Multijector contains neither rotary parts nor electrical components. It does not produce heat in operation and is completely electrically conductive. This makes it explosion proof when earthed/grounded.

**Typical applications for Multijector Vacuum Pumps**

 <ul style="list-style-type: none"> <li>• vacuum handling</li> <li>• vacuum holding</li> <li>• lift heavy loads</li> <li>• equip circuit boards</li> </ul>	 <ul style="list-style-type: none"> <li>• evaporate liquids</li> <li>• mix under vacuum</li> </ul>	 <ul style="list-style-type: none"> <li>• convey powders</li> <li>• aspire dust and mist</li> <li>• feed granules into mach.</li> </ul>
 <ul style="list-style-type: none"> <li>• aspire liquids</li> <li>• liquify foam</li> <li>• aspire oil mist</li> <li>• wash gases</li> </ul>	 <ul style="list-style-type: none"> <li>• evacuate molds</li> <li>• avoid air intake</li> <li>• form under vacuum</li> </ul>	 <ul style="list-style-type: none"> <li>• mix gases</li> <li>• multiply blowing air</li> <li>• reduce O<sub>2</sub> content</li> </ul>
 <ul style="list-style-type: none"> <li>• reduce volume</li> <li>• package with vacuum</li> </ul>	 <ul style="list-style-type: none"> <li>• check with vacuum</li> <li>• find leaks</li> <li>• check instruments</li> </ul>	 <ul style="list-style-type: none"> <li>• separate sheets</li> <li>• cool parts</li> <li>• dust and clean parts</li> </ul>

**Some typical applications for Multijector pumps include:**

**Vacuum lifting and holding**

... of all sorts of items ranging from eggs, china, work pieces, steel sheets, to stone blocks, or other heavy items. No matter if a suction cup grips eggs or opens a bag, a vacuum transporting belt conveys steel sheet billets, a suction plate lifts up heavy granite plates or a robot arm with vacuum grippers fits in system subassemblies or car windscreens - Multijectors simplify and protect many handling tasks and also save money.

**Evacuation to avoid air entrapment**

... in items such as casting moulds, packages, mixing operations, bulk materials (to increase density and reduce bulk size for storage or transport), etc.

**Deep-drawing**

... of plastics is practicable, safe and easily performed with vacuum.

**Vacuum conveying**

... of powders, dusts, granules and small pieces, which can be transported safely and carefully up to 30 m high and up to 80 m distance with vacuum.

**Suction of liquids and fats**

... directly into containers, with the Multijector working as a self priming pump. The recycling can be done with little effort, e.g. in turning-, milling- and grinding-operations, where coolants and lubricants like oil or emulsions are used. Ask for our special units.

**Blast air generation**

... to blow air into containers, in printing and book binding operations etc., where both is needed: vacuum and pressurised air. Multijectors can “multiply” the feeded compressed air by making use of the suction air. They provide pressures up to 0.8 bar at their exhaust – a unique way of saving energy.

**Vacuum distillation**

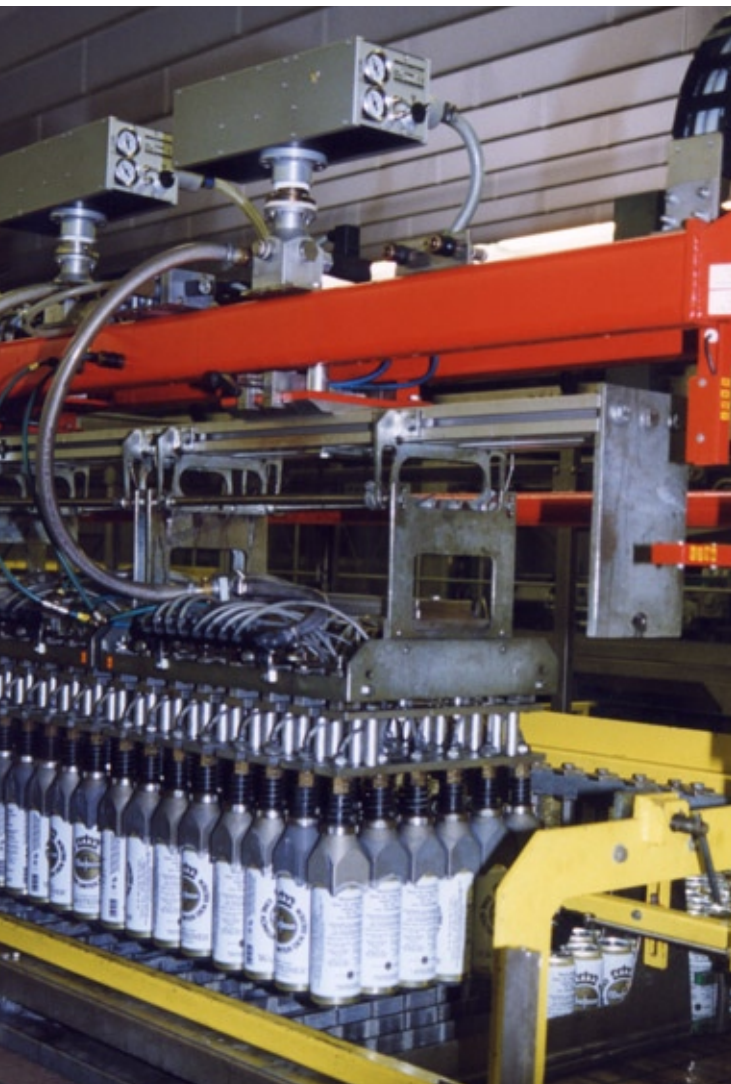
... to reduce boiling points of liquids

**Vacuum filtration**

... to decrease filtration times

**Vacuum testing**

... to detect leakages, using low cost testing units.



## Further energy saving devices in vacuum applications:

### Restricting the vacuum

In handling applications, if the area of the suction cup is maximised, then only a relatively low vacuum has to be created to achieve the required holding force. For example, using a Multijector M or G type, approximately 93 % of the energy requirement can be saved, in most applications, when the vacuum is reduced from -900 to -500 mbar. Hence, only 7 % of the original energy requirement is needed, which gives considerable cost savings.

### Restricting the operating pressure

Use of a simple pressure controller to adjust the working pressure only as high as is needed it for safe operation, can produce worthwhile cost savings. Care must, of course, be taken to ensure that a reasonable pressure reserve is still available. (The appendix of this brochure gives data about the achievable vacuum at different working pressures and how much air is saved.)

### Vacuum control

If a vacuum is to be drawn and maintained in a vessel or contained system, energy can be saved by cutting off the vacuum pump as soon as the required vacuum level has been reached. This can be achieved by monitoring the vacuum and sending a signal to the vacuum pump, via a simple microswitch, which cuts off the compressed air, whilst the vacuum is maintained by including a non-return flap at the pump. The vacuum is, however, likely to slowly decrease, due to leakages etc., hence, at a pre-selected point, a signal to restart the pump can be sent.



Automatic bin discharging and feeding of powders with a MULTIJECTOR Vacuum Pump

## Safe vacuum at 3.5 or 5.6 bar operating pressure?

In most of the compressed air supply lines the pressure is around 6 - 7 bar. Nevertheless sometimes it can happen that the pressure decreases noticeably for a short time in spite of a satisfactory efficient compressor - e. g. because of insufficient pipe diameters, wrong pipework or high momentary air withdrawal in the respective pipe segment.

Normally, it is recommended that the Multijector pumps of the series MULTIJECTOR M, G and K with 5.6 bar operating pressure (0.56 MPa, 81 psi) as being suitable for many applications. In their class they offer optimum efficiency and the best utilisation of compressed air, minimising the energy demand.

However, other nozzle systems have been developed, which are suitable for applications where variable compressed air pressures are likely to be experienced. Here, the Multijector pumps of the series ML and GL, are recommended, as these pumps are specially designed to reach their maximum vacuum of -910 mbar at pressures as low as 3.5 bar.

## Individual solutions

For special, individual applications, Volkmann will be pleased to develop and manufacture innovative, coordinated products, subassemblies and complete system solutions, at attractively low costs and these special enquiries are welcomed.

## Advisory and in-situ trials, vacuum pumps for testing

Technicians and engineers are available for advice and for on site testing and their first hand experience and expertise can prove very helpful.

It is also possible to have any of the vacuum pumps for trials for a period of two weeks, without any obligation. The pumps are, generally, available immediately on request and, except delivery, are free of charge. Such trials will usually quickly demonstrate the suitability of the pump, but further help and technical assistance is always readily available.

**Quality and reliability:  
Volkmann MULTIJECTOR® Vacuum Pumps carry a two year warranty from the day of delivery.**



**compressed  
air savings  
up to 50%**

in comparison to usual one-stage compact-ejectors

The MULTIJECTOR® K series is our youngest ejector family and worldwide the first multiple stage compact ejector. With this compact ejector you really save compressed air at automation applications and lower your overhead expenses. It is unbelievable how lavish many single stage compact-ejectors are with compressed air. We are glad about that, because this way a newly bought MULTIJECTOR® K can often pay for itself in less than one year.

The MULTIJECTOR® K is space and energy saving and was developed by us especially for handling and automation applications. Right now five different performance stages in three designs are available:

### **Compact Ejector MULTIJECTOR® K „Basic“**

A space saving vacuum ejector to be controlled by existing valves (by customers).

### **Compact Ejector MULTIJECTOR® K**

Our real compact ejector for automation with integrated valves and vacuum switch. Choose the functions needed for your application:

- **Main valve:** integrated solenoid valve for controlling the ejector function ON/OFF
- **Blow off valve:** solenoid valve for blowing back into the vacuum line and therefore offering fast release of the part which is held. The intensity of the blowing off is adjustable by an adjusting screw directly at the compact ejector.
- **Vacuum switch:** Electric vacuum switch, either with adjustable switching point and adjustable hysteresis (analogous output of the present vacuum level) or with two adjustable switching points

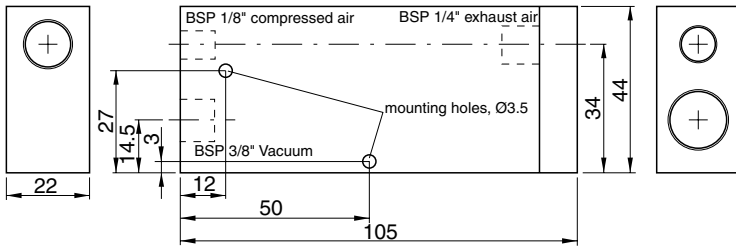
### **Vacuum manifold block**

Available as combined vacuum manifold with up to 4 or 8 compact ejectors. Coordinate the detailed configuration with us.

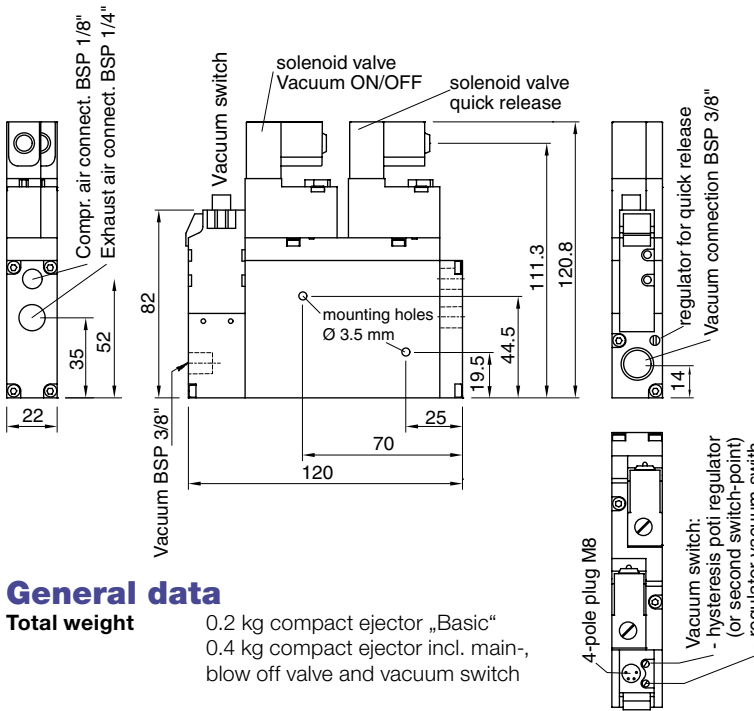
### **Standard delivery volume**

- Exhaust air silencer with Ø20\*70 mm, G1/4". PE-HD
- Filter sieve inserted in vacuum connection (not on „Basic“)
- Vacuum non return valve (avoids system vacuum leakage), enclosed loose
- Please order plugs for solenoid valves and vacuum switches separately.

## Compact Ejector **MULTIJECTOR® K „Basic“**



## Compact Ejector **MULTIJECTOR® K**



### General data

**Total weight** 0.2 kg compact ejector „Basic“  
0.4 kg compact ejector incl. main-, blow off valve and vacuum switch

**Materials** Ejector: Aluminium, Nitrile-gaskets  
SS-screw connections  
Solenoid valves: plastic housing, Aluminium, brass, Polyurethane-gaskets  
Vacuum switch/housing: PC + POM plastics

**Compressed air** 3 - 7 bar (opt. 5 - 6 bar), dry + clean

**Oper. temp. range** Ejector -20 up to +80°C  
Solenoid valves -15 up to +60°C  
Vacuum switch -20 up to +70°C

**Solenoid valves** 24 VDC, 1.2 W, NC  
(NO on request)

**Vacuum switches** 10.8 - 30 VDC, exit PNP 80mA max.

**IP-classes** Solenoid valves with plug: IP 65  
Vacuum switch: IP 40

## Variants and model numbers

Modelno.	Description	Design (+ with, - without)		
		Main valve	Blow off valve	Vacuum switch
110.500	Multijector K50 Basic	-	-	-
110.501	Multijector K50 S	+	-	-
110.502	Multijector K50 SA	+	+	-
110.503	Multijector K50 SV	+	-	+
110.504	Multijector K50 SAV	+	+	+
110.510	Multijector K75 Basic	-	-	-
110.511	Multijector K75 S	+	-	-
110.512	Multijector K75 SA	+	+	-
110.513	Multijector K75 SV	+	-	+
110.514	Multijector K75 SAV	+	+	+
110.520	Multijector K100 Basic	-	-	-
110.521	Multijector K100 S	+	-	-
110.522	Multijector K100 SA	+	+	-
110.523	Multijector K100 SV	+	-	+
110.524	Multijector K100 SAV	+	+	+
110.530	Multijector K150 Basic	-	-	-
110.531	Multijector K150 S	+	-	-
110.532	Multijector K150 SA	+	+	-
110.533	Multijector K150 SV	+	-	+
110.534	Multijector K150 SAV	+	+	+
110.540	Multijector K200 Basic	-	-	-
110.541	Multijector K200 S	+	-	-
110.542	Multijector K200 SA	+	+	-
110.543	Multijector K200 SV	+	-	+
110.544	Multijector K200 SAV	+	+	+

### Manifold block-modules for combining several compact-ejectors **MULTIJECTOR® K** to vacuum manifold (not suitable for „Basic“)

- 110.550 Manifold block K4, for up to 4 compact-ejectors, incl. screws / gaskets
- 110.551 Manifold block K8, for up to 8 compact-ejectors, incl. screws / gaskets
- 110.552 Blind plate for manifold blocks K, for empty positions incl. screws / gaskets

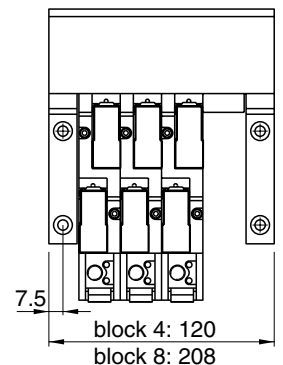
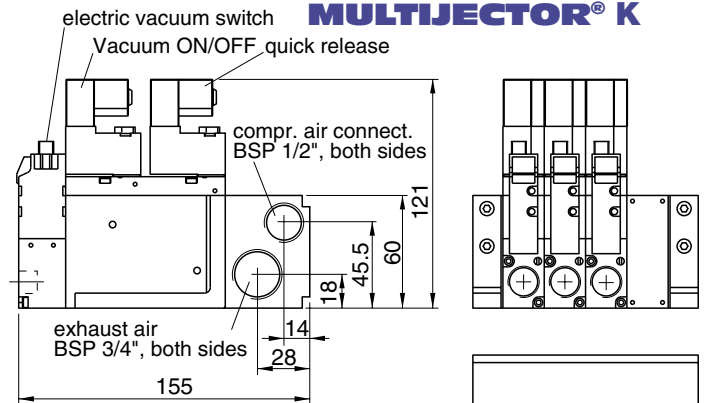
### Connection plugs and cables for solenoid valves

- 110.604 Connection cable 5 m, Polyurethane, incl. plug, incl. LED
- 110.606 Connection plug, incl. LED, without cable
- 110.607 Connection plug, without LED, without cable

### Connection plugs for vacuum switch

- 110.601 Connection cable 5 m, Polyurethane, incl. plug

## Vacuum manifold block **MULTIJECTOR® K**



Ejector type	Operat. press.	Comp. air consump.	max. Vacuum	Suction air flow (in NI/min) at the respective vacuum (in mbar)												
				0	-50	-100	-150	-200	-300	-400	-500	-600	-700	-800	-900	
K50	5.5 bar	50 NI/min	-910 mbar	74	70	66	60	53	36	23	18	13	8	3.5	1	
K75	5.4 bar	74 NI/min	-920 mbar	110	105	96	86	74	50	33	26	19	11	5	1.2	
K100	5.4 bar	99 NI/min	-930 mbar	165	155	140	122	105	68	46	36	26	14	7	1.5	
K150	5.4 bar	150 NI/min	-930 mbar	175	166	155	144	130	102	70	50	36	21	10	2	
K200	5.3 bar	194 NI/min	-920 mbar	240	230	220	200	180	140	96	64	45	26	12	2.5	



Multijector pumps of the M- and ML-series work with **three ejector stages** which are connected in a row. Their robust and compact aluminium casing makes the pump resistant even to strong mechanical or thermal loads. Nevertheless they are very light and offer considerable amounts of suction air at a small size. The compact form allows them to be mounted directly at the location where vacuum is needed.

Their high efficiency makes the VOLKMANN Multijectors of the M- and ML-series the ideal vacuum pump for a multitude of different handling applications, for vacuum packing, vacuum testing, vacuum transportation, vacuum fixing, de-gassing of liquids and mixing, evacuation of small casting moulds etc.

## **MULTIJECTOR® M**

The optimal choice with the best efficiency. Vacuum pumps of this series are used when a compressed air supply of 6 bar is available: high suction power at a favourable price.

## **MULTIJECTOR® ML**

If the pressure in the compressed air supply line decreases frequently and nevertheless a high vacuum is needed, our Vacuum Pumps of the ML-series reach high vacuum levels with an inlet pressure of only 3.5 bar. They are the clever choice to ensure a high vacuum at low operating pressure and pressure variations.

### **Standard delivery features**

All pumps of the M- and ML-series incl. vacuum gauge and fixing device for easy mounting.

### **Options**

If the exhaust air is emitted directly into the surrounding, we recommend the usage of our FD-silencer (order option FD). The integrated vacuum non return valve prevents system vacuum leakage by back-flow through the pump when it is switched off, so that the vacuum is held longer inside the system (order option H). You get M-types with Viton-gaskets with the order-option V.

**Test Pumps** can be sent to you for trials and approval.



Type	op. comp. air pres.consump.		Suction air flow (in NI/min) at the respective Vacuum (in mbar)								
	bar	NI/min	0	-100	-200	-300	-400	-500	-600	-700	-800
M 90	5.5	86	395	226	140	76	45	35	23	13	6
M 180	5.5	172	790	452	280	152	90	70	46	26	12
M 270	5.5	252	1185	678	420	228	135	105	69	39	18
M 360	5.5	344	1501	859	560	304	180	140	92	52	24
M 450	5.5	430	1876	1074	700	380	225	175	115	65	30
M 540	5.5	516	2252	1288	840	456	270	210	138	78	36
ML 50	3.5	50	181	93	52	25	21	17	12	6	2
ML 100	3.5	100	361	185	103	50	41	34	24	13	3
ML 150	3.5	150	542	278	155	75	62	51	36	19	5
ML 200	3.5	200	722	370	206	100	82	68	48	25	6
ML 250	3.5	250	903	463	258	125	103	85	60	31	8
ML 300	3.5	300	1083	555	309	150	123	102	72	38	9

Type	max. Vacuum		Time in Seconds to evacuate a 1 m³ volume from atmospheric pressure to stated vacuum level (in mbar)								
	bar	mbar	-100	-200	-300	-400	-500	-600	-700	-800	-900
M 90	5.5	-910	16	46	98	214	368	612	1024	1896	5072
M 180	5.5	-910	8	23	49	107	184	306	512	948	2536
M 270	5.5	-910	5	15	33	71	123	204	341	632	1690
M 360	5.5	-910	4	12	25	54	92	153	256	474	1268
M 450	5.5	-910	3	9	20	43	74	122	205	379	1014
M 540	5.5	-910	3	8	16	36	61	102	170	316	844
ML 50	3.5	-910	32	100	272	528	857	1342	3567	5596	26862
ML 100	3.5	-910	16	50	136	264	429	671	1212	2798	13431
ML 150	3.5	-910	11	33	91	176	286	447	1189	1865	8954
ML 200	3.5	-910	8	25	68	132	214	336	892	1399	6716
ML 250	3.5	-910	6	20	54	106	172	268	485	1119	5372
ML 300	3.5	-910	5	17	45	88	143	224	404	933	4477

## General Data M + ML Series

Vacuum: max. 91 % (-910 mbar)  
 Suction air flow: 180 to 1450 NI/min  
 Operating pressure: 2 to 6 bar  
 M-types opt. 5.6 bar  
 ML-types opt. 3.5 bar  
 Operating noise: 55 to 78 dB(A)  
 (with FD-silencer)  
 Oper. temp.range: -20 to +80 °C  
 Materials: Aluminium, Stainl. Steel,  
 Nitril, Polyethylene-HD,  
 silicone-free

Type	Model No.	Width B	Weight
M 90	110.141	52 mm	0.7 kg
M 180	110.142	65 mm	0.8 kg
M 270	110.143	88 mm	1.0 kg
M 360	110.144	110 mm	1.4 kg
M 450	110.145	133 mm	1.7 kg
M 540	110.146	156 mm	1.9 kg
ML 50	110.180	52 mm	0.7 kg
ML 100	110.181	65 mm	0.8 kg
ML 150	110.182	88 mm	1.0 kg
ML 200	110.183	110 mm	1.4 kg
ML 250	110.184	133 mm	1.7 kg
ML 300	110.185	156 mm	1.9 kg

## Order Options

with FD-silencer: Model No. + FD  
 with Viton gaskets/flaps: Model No. + V  
 with vacuum non return valve: Model No. + H

**Order Example:** M 270 with FD-silencer plus Viton gaskets: Model No. 110.143FDV

More detailed information can be found on the last double-page of this catalogue.

### M 90 M 180 M 270

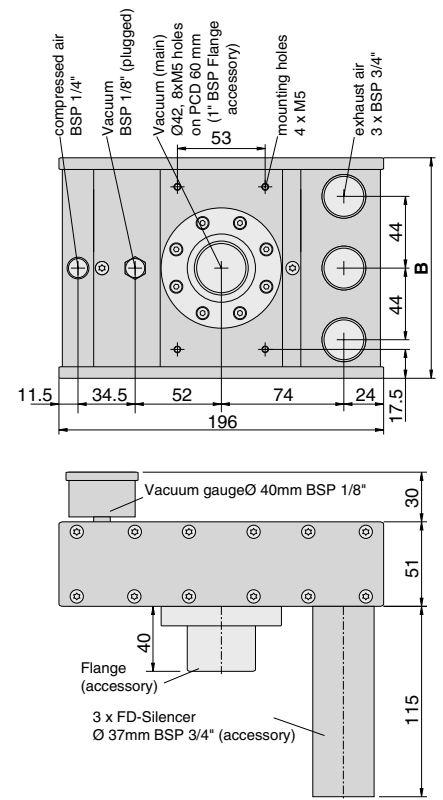
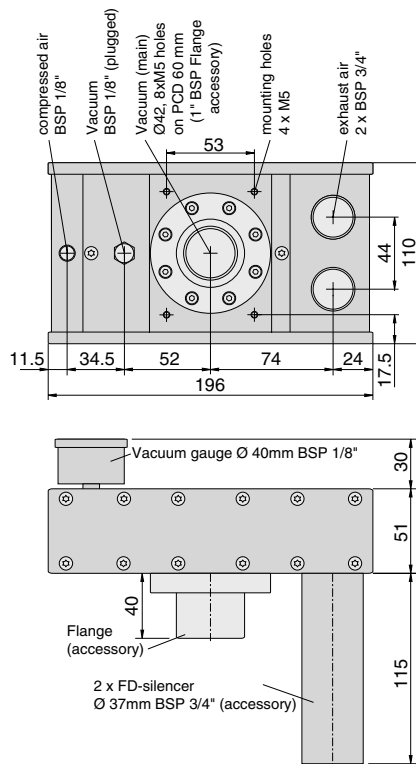
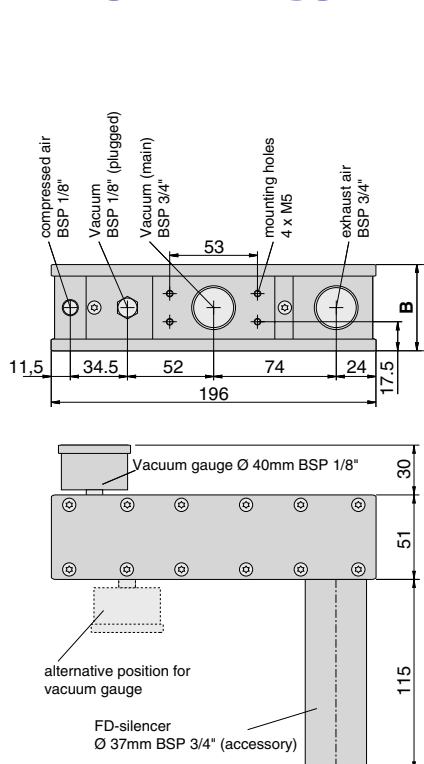
### ML 50 ML 100 ML 150

### M 360

### ML 200

### M 450 M 540

### ML 250 ML 300





Our Multijector Vacuum Pumps of the G- and GL-series are **four-stage ejectors** and offer an even better efficiency especially at free aspiration and low vacuum. They consist of a light and nevertheless tough modular Aluminium design. As usual for Multijectors, also this pump family can be installed easily: Just connect compressed air- and vacuum line, that's all.

The G- and GL-series are our top-models for fast evacuation of big volumes and for achieving high suction performance, e. g. for evacuation of casting-, press- and deep-drawing moulds, for vacuum conveying, for suction of abrasives and handling of heavy parts with high leakage risks. Also in the graphical and printing industries they are used successfully - not only for creation of vacuum but often also for fanning out and separating paper sheets.

**MULTIJECTOR® G** – the optimum if 6 bar operating pressure are available because they are the most efficient.

**MULTIJECTOR® GL** – the safe choice at low operating pressure or if strong pressure variations have to be taken into account because they achieve their maximum vacuum at only 3.5 bar inlet pressure.

### Standard delivery features

All Multijector G- and GL-types are equipped with vacuum- and pressure-gauge a well as with integrated valve and hand switch for turning the pump ON/OFF manually. Furthermore a direct remote control of this Multijector can be done via mini-couplings by a pneumatic signal, only control air is needed. The pump is supplied with an integrated silencer.

### Order options

Suitable vacuum flanges are delivered together with the pump if you choose the order option FL. Please order the pump variant with exhaust air adaptor (order option AA) if the exhaust air shall be drawn off centrally. The optionally integrated vacuum non return valve prevents system vacuum leakage by back-flow through the pump when it is switched off so that the vacuum is held longer (order option H). G-types with Viton gaskets can be ordered with the option V.

**Test Pumps** can be sent to you for trials and approval.



Type	op. comp. air pres. consump.		Suction air flow (in NI/min) at the respective Vacuum (in mbar)								
	bar	NI/min	0	-100	-200	-300	-400	-500	-600	-700	-800
G 360	5.5	344	1960	870	548	306	185	136	87	48	25
G 540	5.5	516	2744	1305	822	459	278	204	131	72	38
G 720	5.5	688	3250	1740	1096	612	369	272	173	96	51
G 900	5.5	860	4063	2175	1370	765	461	340	216	120	64
G 1260	5.5	1204	5688	3045	1918	1071	646	476	303	168	89
G 1800	5.5	1720	8125	4350	2740	1530	923	680	433	240	127
G 2700	5.5	2580	12188	6525	4110	2295	1384	1020	649	360	191
G 3600	5.5	3440	16250	8700	5480	3060	1845	1360	865	480	254
G 4500	5.5	4300	20313	10875	6850	3825	2306	1700	1081	600	318
GL 200	3.5	200	916	389	228	99	80	65	48	27	6
GL 300	3.5	300	1373	584	341	148	120	98	72	41	9
GL 400	3.5	400	1831	778	455	197	160	131	95	53	13
GL 500	3.5	500	2288	972	568	246	200	164	119	66	16
GL 700	3.5	700	3203	1361	795	344	280	230	167	92	22
GL 1000	3.5	1000	4576	1944	1136	492	400	327	238	133	31
GL 1500	3.5	1500	6864	2916	1704	738	600	491	357	199	47
GL 2000	3.5	2000	9152	3888	2272	984	800	654	476	265	63
GL 2500	3.5	2500	11440	4860	2840	1230	1000	818	595	332	79

Type	max. Vacuum		Time in Seconds to evacuate a 1 m³ volume from atmospheric pressure to stated vacuum level (in mbar)								
	bar	mbar	-100	-200	-300	-400	-500	-600	-700	-800	-900
G 360	5.5	-910	2.5	9.5	23	46	80	136	244	444	1271
G 540	5.5	-910	1.7	6.3	15	31	53	91	163	296	847
G 720	5.5	-910	1.3	4.8	11	23	40	68	122	222	636
G 900	5.5	-910	1.0	3.8	9	18	32	54	98	178	508
G 1260	5.5	-910	0.7	2.7	6	13	23	39	70	127	363
G 1800	5.5	-910	0.5	1.9	5	9	16	27	49	89	254
G 2700	5.5	-910	0.3	1.3	3	6	11	18	33	59	169
G 3600	5.5	-910	0.3	1.0	2	5	8	14	24	44	127
G 4500	5.5	-910	0.2	0.8	2	4	6	11	20	36	102
GL 200	3.5	-910	6.5	21.0	56	116	190	299	494	1158	5193
GL 300	3.5	-910	4.3	14.0	37	77	127	199	329	772	3462
GL 400	3.5	-910	3.3	10.5	28	58	95	150	247	579	2597
GL 500	3.5	-910	2.6	8.4	22	46	76	120	198	463	2077
GL 700	3.5	-910	1.9	6.0	16	33	54	85	141	331	1484
GL 1000	3.5	-910	1.3	4.2	11	23	38	60	99	232	1039
GL 1500	3.5	-910	0.9	2.8	7	15	25	40	66	154	692
GL 2000	3.5	-910	0.7	2.1	6	12	19	30	49	116	519
GL 2500	3.5	-910	0.5	1.7	4	9	15	24	40	93	415

## General data G+GL series

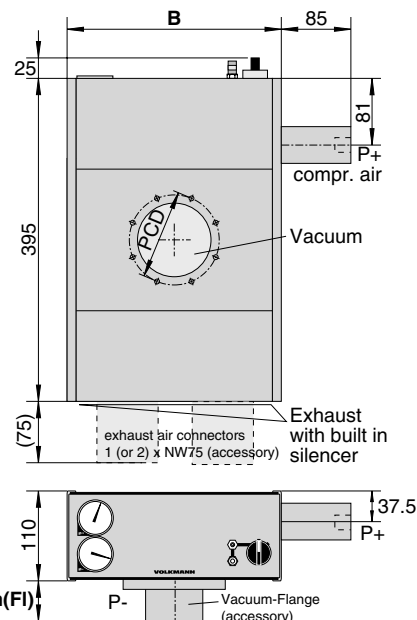
Vacuum: max. 91 % (-910 mbar)  
 Suction air flow: 700 to 21000 NI/min  
 Operat. pressure: 2 to 6 bar  
 G-Types opt. 5.6 bar  
 GL-Types opt. 3.5 bar  
 Operating noise: 55 to 80 dB(A)  
 Oper. temp. range: -20 to +60 °C  
 Materialis: Aluminium, Stainless Steel, Polyethylene-HD, brass, Nitrile, Silicone-free

## Order options

with flange: Model No. + FL  
 with Viton-gaskets/flaps: Model No. + V  
 with exhaust air adaptor: Model No. + AA  
 with vacuum non return valve: Model No. + H

## Order example

Multijector G 1800 with flange and Viton-gaskets = Model No. 110.248FLV



More detailed information can be found on the last double-pages of this catalogue.

Type	Model No.	width B	weight	compressed air supply P+	vacuum connect. screw hole circle PCD	vacuum flange (accessory)	flange height h(FI)	exhaust-air adaptor (accessory)
G 360	110.244	127 mm	5.5 kg	BSP 1/2"	8 x M5 with PCD 80	BSP 1 1/2"	39 mm	1 x Ø 75
G 540	110.254	127 mm	5.6 kg	BSP 1/2"	8 x M5 with PCD 80	BSP 1 1/2"	39 mm	1 x Ø 75
G 720	110.245	127 mm	5.7 kg	BSP 1/2"	8 x M5 with PCD 80	BSP 1 1/2"	39 mm	1 x Ø 75
G 900	110.246	150 mm	6.2 kg	BSP 3/4"	8 x M5 with PCD 80	BSP 1 1/2"	39 mm	1 x Ø 75
G 1260	110.247	195 mm	7.3 kg	BSP 3/4"	8 x M5 with PCD 110	BSP 2"	49 mm	1 x Ø 75
G 1800	110.248	262 mm	9.0 kg	BSP 3/4"	8 x M5 with PCD 110	BSP 2"	49 mm	1 x Ø 75
G 2700	110.249	375 mm	11.7 kg	BSP 1"	8 x M6 with PCD 160	BSP 2 1/2"	49 mm	1 x Ø 75
G 3600	110.250	487 mm	14.4 kg	BSP 1"	8 x M6 with PCD 160	BSP 2 1/2"	49 mm	2 x Ø 75
G 4500	110.251	600 mm	17.3 kg	BSP 1"	8 x M6 with PCD 160	BSP 2 1/2"	49 mm	2 x Ø 75
GL 200	110.315	127 mm	5.5 kg	BSP 1/2"	8 x M5 with PCD 80	BSP 1 1/2"	39 mm	1 x Ø 75
GL 300	110.325	127 mm	5.6 kg	BSP 1/2"	8 x M5 with PCD 80	BSP 1 1/2"	39 mm	1 x Ø 75
GL 400	110.316	127 mm	5.7 kg	BSP 1/2"	8 x M5 with PCD 80	BSP 1 1/2"	39 mm	1 x Ø 75
GL 500	110.317	150 mm	6.2 kg	BSP 1/2"	8 x M5 with PCD 80	BSP 1 1/2"	39 mm	1 x Ø 75
GL 700	110.318	195 mm	7.3 kg	BSP 3/4"	8 x M5 with PCD 110	BSP 2"	49 mm	1 x Ø 75
GL 1000	110.319	262 mm	9.0 kg	BSP 3/4"	8 x M5 with PCD 110	BSP 2"	49 mm	1 x Ø 75
GL 1500	110.320	375 mm	11.7 kg	BSP 3/4"	8 x M6 with PCD 160	BSP 2 1/2"	49 mm	1 x Ø 75
GL 2000	110.321	487 mm	14.4 kg	BSP 1"	8 x M6 with PCD 160	BSP 2 1/2"	49 mm	2 x Ø 75
GL 2500	110.322	600 mm	17.3 kg	BSP 1"	8 x M6 with PCD 160	BSP 2 1/2"	49 mm	2 x Ø 75

# MULTIJECTOR® MRVA and MRVAC

The first multiple stage ejector completely made of stainless steel



## Description

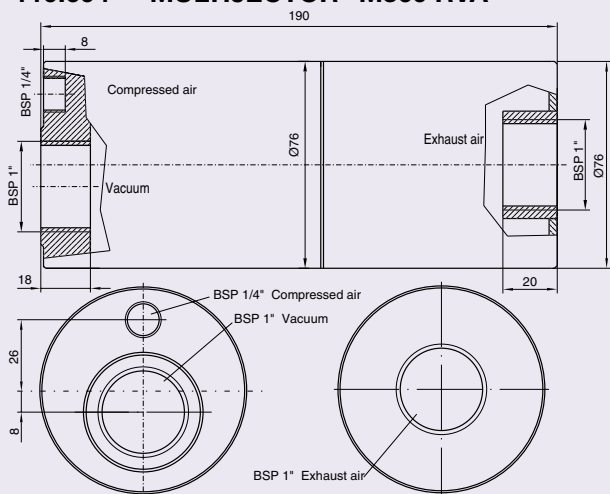
Multijectors of the MRVA- and MRVAC-series are three stage ejectors in a round stainless steel design. This Multijector-type offers an enormous suction performance of up to 4.5 times the used compressed air and up to -910 mbar vacuum at very compact size. As the MRVA vacuum generators are made of high-quality resistant materials (stainless steel AISI 304 and Viton-gaskets are standard, options: stainless steel AISI 316L and others, PTFE-coated gaskets), they are **ideal for applications where aggressive drawn-off media or critical ambience conditions have to be taken into consideration.**

Furthermore the Multijector MRVAC is **the first CIP-able multiple stage ejector pump** and can completely be rinsed inside from the vacuum side in installed state. The cleansing liquid leaves the MRVAC through the exhaust air opening (fitting position: exhaust air opening at the bottom). Vacuum- and exhaust air opening of the MRVAC are equipped with clamp-connection pieces.

### Model No. Type

110.693 MULTIJECTOR® M270 RVA

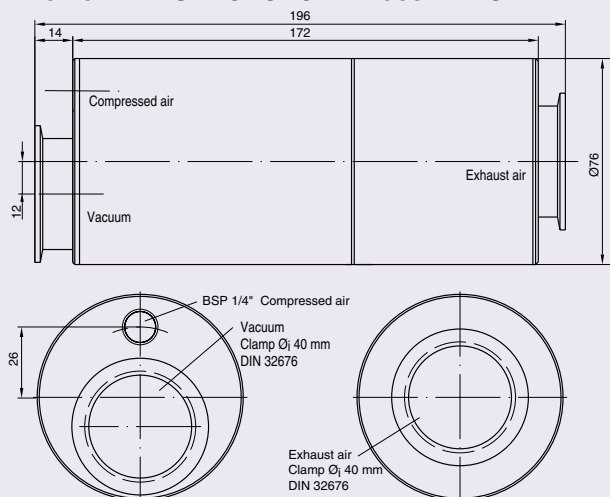
110.694 MULTIJECTOR® M360 RVA



### Model No. Type

110.703 MULTIJECTOR® M270 RVAC

110.704 MULTIJECTOR® M360 RVAC



- wear- and maintenance-free
- good chemical resistance
- easy installation
- compact size
- oil-free operation
- CIP-able

### Technical data

	M270 RVA	M360 RVA
Max. vacuum:	-900 mbar	-900 mbar
Max. Suction air flow:	1150 NI/min	1450 NI/min
Compr. air consumption:	252 NI/min	344 NI/min
Operating pressure:	3 - 6 bar	
Opt. operating pressure:	5.6 bar	
Operating noise:	55-78 dB(A)	
Weight:	2.5 kg	2.6 kg
Operable temp. range:	-20 to +80°C	
Materials:	AISI 304, Viton (optional AISI316L/PTFE)	

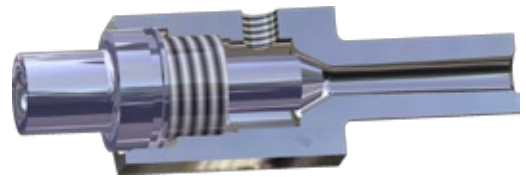
Please inquire separately for special materials.

### Suction air flow (in NI/min) at the respective Vacuum (in mbar)

Typ	-0	-100	-200	-300	-400	-500	-600	-700	-800
M270	1150	660	420	228	135	105	69	39	18
M360	1450	810	560	304	180	140	92	52	24

### Time in Seconds to evacuate a 1 m³ volume from atmospheric pressure to stated vacuum level (in mbar)

Typ	-100	-200	-300	-400	-500	-600	-700	-800	-900
M270	6	16	34	72	124	205	350	650	1700
M360	5	13	26	55	93	155	265	490	1300

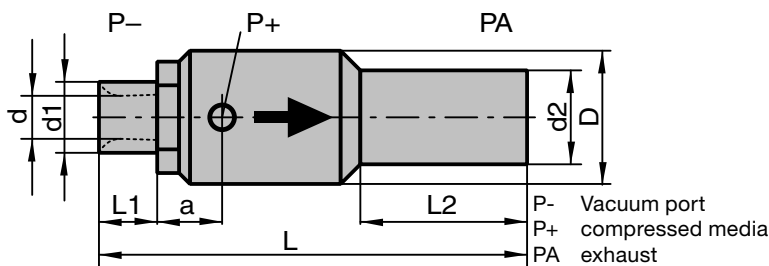


Varijectors are **adjustable radial gap ejectors** with whole accessible linear vacuum flow/exhaust gas stream running through the ejector's manifold. They can be used with a wide variety of different compressed operation media (propellants, e.g. compressed air, nitrogen, O<sub>2</sub>, CO<sub>2</sub> ...) and aspire from any gas atmosphere. The compressed gas is injected radially, with a little angle directed into the flow direction, where it is mixed under high turbulences with the gas to be aspirated and goes into a diffuser nozzle.

Varijectors have an open inner diameter with sizes between Ø 5 up to 50 mm. They reach a maximum vacuum between -10 to -70 kPa. Varijectors can be used to aspire material and blow it into cyclones; to evaporate chemical processes; to mix gases; to feed textile threads and fabrics; to dry wire, tubes and parts; to maximize blowing air; to cool surfaces ... there are hundreds of applications.

Varijectors can be operated with compressed gases from 0 - 6 bar. According to the operation pressure, the Varijector reaches a certain aspiration volume, a ratio between aspired and compressed gas used and a certain maximum vacuum. Additionally, the radial gap can be adjusted at most of the models (not on the HT type), for easy adjustment of the maximum vacuum, airflow, gas consumption and mixing ratio.

Volkman Varijectors can be supplied in various materials, like anodized aluminium, stainless steel, high temperature resistant steel, PE, PP and other. Customized types with special diameters, flow ratios or individual materials are available upon request.



### Materials (other materials on request)

- Alu:** anidized aluminium, nickelplated brass, nitrile gaskets
- Stainl.:** Stainless steel 1.4305 (304) Viton gaskets
- HT steel:** high temperature resistant steel easy exchangeable wearing parts copper/brass gaskets

Typ	Article No.	Ød mm	Ød1 mm	Ød2 mm	ØD mm	L mm	L1 mm	L2 mm	a mm	P+ (BSP)	max. vacuum	air consumpt. at 6 bar op.pr.	suction air at 6 bar op.pr.
PV100	100.457 (Alu)	10	G3/4"	40 und	40	152,5	14	76	51,5	G 3/8" (inner)	-80 kPa	0 - 1000 NI/min	max. 700 NI/min
	100.821 (Stainl.)		(AG)	IG3/4"									
PV150	101.968 (Alu)	15	25	25	40	198	30	90	57	G 3/8" (IG)	-75 kPa	0 - 1600 NI/min	max. 1200 NI/min
	101.969 (Stainl.)												
PV200	101.970 (Alu)	20	32	32	50	216	31,5	90	63,5	G 3/8" (IG)	-50 kPa	0 - 2200 NI/min	max. 2400 NI/min
	101.971 (Stainl.)												
PV250	101.972 (Alu)	25	32	40	60	236,5	38	110	64,5	G 3/8" (IG)	-45 kPa	0 - 3200 NI/min	max. 3300 NI/min
	101.973 (Stainl.)												
PV250HT	110.410 (HT steel)	25	45	50	70	205	47,5	97	28,5	G 3/8" (IG)	-30 kPa	2400 NI/min	max. 3700 NI/min
PV300	110.386 (Alu)	30	40	50	65	237	40,5	110	62	G 3/8" (IG)	-30 kPa	0 - 3400 NI/min	max. 4000 NI/min
	110.387 (Stainl.)												
PV400	110.393 (Alu)	40	50	75	90	277	50	120	62,5	G 1/2" (IG)	-15 kPa	0 - 3600 NI/min	max. 5500 NI/min

## VACUUM Cups



More than 200 different Vacuum Cups available, regularly from stock.

We supply miniature Vacuum Cups, e.g. for the handling of semiconductors, bellow cups with integrated lift, e.g. for packaging machines, flat cups for printing machines, transparent or blue cups for Pharma and Food applications (FDA conform materials used), and large Vacuum Cups with greater lifting forces for parts being very heavy (some hundred kilos). In our wide spread program, you can choose from various cup materials.

We hope you find the suitable Vacuum Cup in our program, and are sure, you will like our attractive conditions.



### Flat Vacuum Cups: Pages 14-15

### Bellow Vacuum Cups: Pages 16-17

### Universal Vacuum Cups: Pages 18-19

#### Flat Vacuum Cups

Flat Vacuum Cups are used for flat objects such as sheetmetal, cardboard or porous materials and in those cases, when high lifting forces are necessary. Their integrated cleats and good stability offer a better precision in pick-and-place applications than Universal Vacuum Cups do.

##### Materials

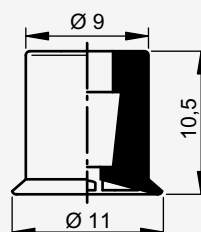
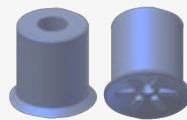
- NBR:** Nitrile, oilresistant and durable, -20 to +120°C  
**SIL:** Silicone, for higher temperatures, -50 to + 220°C  
**SIL (FDA):** Silicone, suitable for foodstuff  
**SIL (AS):** Conductive Silicone (e.g. for Semiconductor handling)

The Fittings are listed on page 20 of this brochure. ➔

Ø 11

##### Vacuum Cup V10F

**NBR:** 111.277  
**SIL:** 111.278  
**SIL (FDA):** 111.279



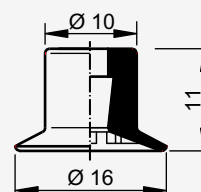
##### Fitting:

VA10: 111.334

Ø 16

##### Vacuum Cup V15F

**NBR:** 111.280  
**SIL:** 111.281  
**SIL (FDA):** 111.282



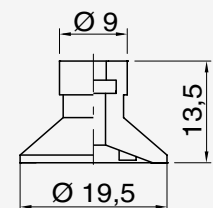
##### Fitting:

VA10: 111.334

Ø 19,5

##### Vacuum Cup VC119

**PVC:** 111.646  
**PU:** 111.647



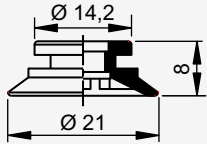
##### Fitting:

VCA9: 111.357

Ø 21

**Vacuum Cup V20F**

NBR: 111.286  
SIL: 111.287  
SIL (FDA): 111.288



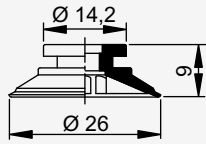
**Fitting:**

VA20: 111.336  
VA20M: 111.337

Ø 26

**Vacuum Cup V25F**

NBR: 111.289  
SIL: 111.290  
SIL (FDA): 111.291



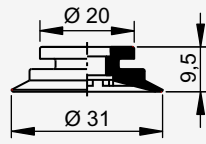
**Fitting:**

VA20: 111.336  
VA20M: 111.337

Ø 31

**Vacuum Cup V30F**

NBR: 111.295  
SIL: 111.296  
SIL (FDA): 111.297



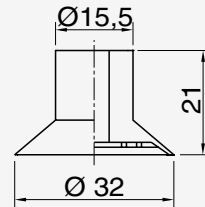
**Fitting:**

VA30: 111.339  
VA30M: 111.340

Ø 32

**Vacuum Cup VC2C**

PVC: 111.658  
PU: 111.659



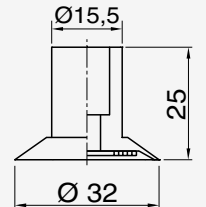
**Fitting:**

VCA8: 111.356

Ø 32

**Vacuum Cup VC2D**

PVC: 111.662  
PU: 111.663



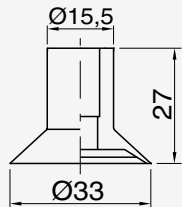
**Fitting:**

VCA7: 111.355

Ø 33

**Vacuum Cup VC2EH**

PVC: 111.666  
PU: 111.667



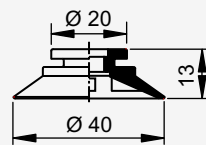
**Fitting:**

VCA7: 111.355

Ø 40

**Vacuum Cup V40F**

NBR: 111.301  
SIL: 111.302  
SIL (FDA): 111.303



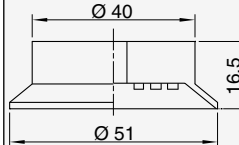
**Fitting:**

VA30: 111.339  
VA30M: 111.340

Ø 51

**Vacuum Cup VC59**

PVC: 111.686  
PU: 111.687

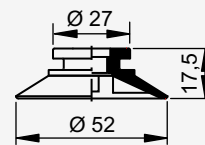


**For tube mounting  
Ø 8-9 mm**

Ø 52

**Vacuum Cup V50F**

NBR: 111.307  
SIL: 111.308  
SIL (FDA): 111.309



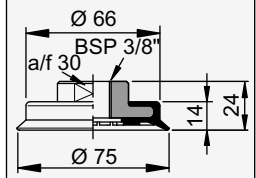
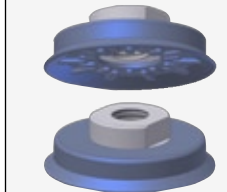
**Fitting:**

VA50: 111.342  
VA50M: 111.343

Ø 75

**Vacuum Cup V75F**

NBR: 111.310  
SIL: 111.311

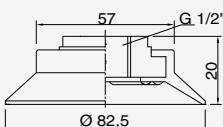
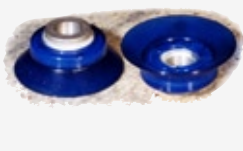


**With molded fitting  
(Alum.)**

Ø 82

**Vacuum Cup VC27A**

PVC: 111.818  
PU: 111.819

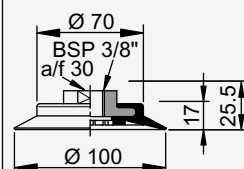
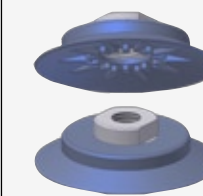


**With molded fitting  
(Alum.)**

Ø 100

**Vacuum Cup V100F**

NBR: 111.313  
SIL: 111.314

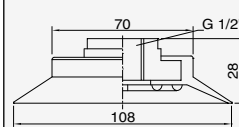


**With molded fitting  
(Alum.)**

Ø 108

**Vacuum Cup VC27**

PVC: 111.814  
PU: 111.815

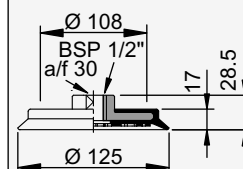
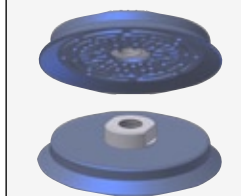


**With molded fitting  
(Alum.)**

Ø 125

**Vacuum Cup V125F**

NBR: 111.316  
SIL: 111.317

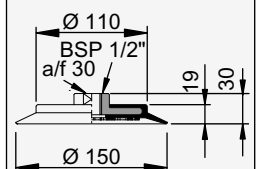
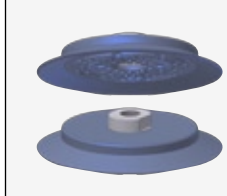


**With molded fitting  
(Alum.)**

Ø 150

**Vacuum Cup V150F**

NBR: 111.319  
SIL: 111.320



**With molded fitting  
(Alum.)**

# Bellow Vacuum Cups

Bellow Vacuum Cups provide an integrated lift function. They can compensate vertical tolerances of the surface which shall be gripped and can be used to separate thin items. They can handle flat and slightly curved surfaces.

## Materials

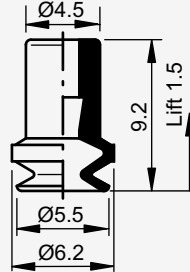
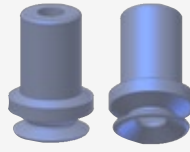
- NBR: Nitrile, oilresistant and durable, -20 to +120°C
- SIL: Silicone, for higher temperatures, -50 to + 220°C
- SIL (FDA): Silicone, suitable for foodstuff
- SIL (AS): Conductive Silicone (e.g. for Semiconductor handling)

The Fittings are listed on page 20 of this brochure. ➔

Ø 5

### Vacuum Cup V6B

NBR: 111.214  
SIL (FDA): 111.215  
SIL (AS): 111.216

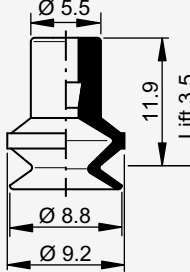
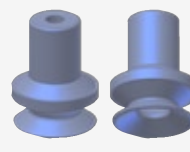


**Fitting:**  
VA4: 111.333

Ø 8

### Vacuum Cup V8B

NBR: 111.217  
SIL (FDA): 111.218  
SIL (AS): 111.219

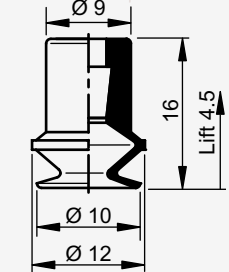


**Fitting:**  
VA4: 111.333

Ø 10

### Vacuum Cup V10B

NBR: 111.220  
SIL: 111.221  
SIL (FDA): 111.222

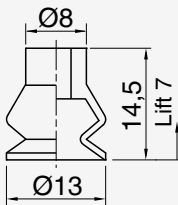


**Fitting:**  
VA10: 111.334

Ø 13

### Vacuum Cup VCB3

PVC: 111.564  
PU: 111.565

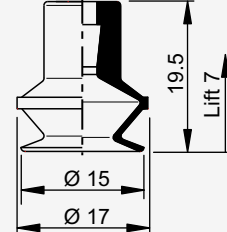


**Fitting:**  
VCA3: 111.351

Ø 15

### Vacuum Cup V15B

NBR: 111.226  
SIL: 111.227  
SIL (FDA): 111.228

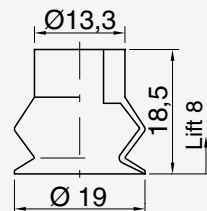


**Fitting:**  
VA10: 111.334

Ø 19

### Vacuum Cup VCB2

PVC: 111.560  
PU: 111.561

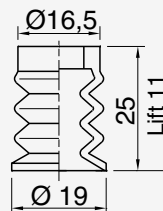


**Fitting:**  
VCA22: 111.368

Ø 19

### Vacuum Cup VC33A5

PVC: 111.590  
PU: 111.591

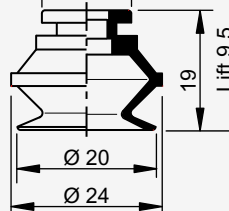


**Fitting:**  
VCA17: 111.364

Ø 20

### Vacuum Cup V20B

NBR: 111.232  
SIL: 111.233  
SIL (FDA): 111.234

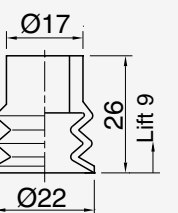


**Fitting:**  
VA20: 111.336  
VCA20M: 111.337

Ø 22

### Vacuum Cup VC33A3

PVC: 111.582  
PU: 111.583

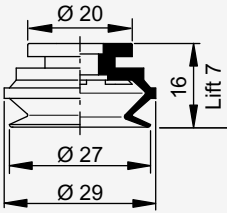


**Fitting:**  
VCA18: 111.365

Ø 27

### Vacuum Cup V25B

NBR: 111.238  
SIL: 111.239  
SIL (FDA): 111.240

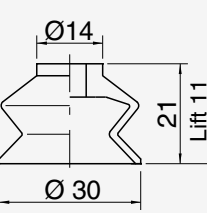


**Fitting:**  
VA30: 111.339  
VA30M: 111.340

Ø 30

### Vacuum Cup VCB1

PVC: 111.556  
PU: 111.557

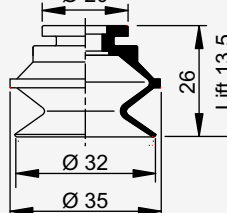


**Fitting:**  
VCA11: 111.358

Ø 32

### Vacuum Cup V30B

NBR: 111.244  
SIL: 111.245  
SIL (FDA): 111.246

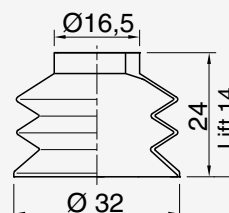


**Fitting:**  
VA30: 111.339  
VA30M: 111.340

Ø 32

### Vacuum Cup VC33A2

PVC: 111.578  
PU: 111.579



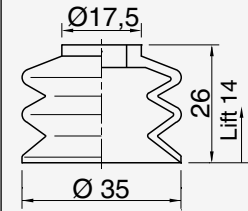
**Fitting:**  
VCA12: 111.359



Ø 35

**Vacuum Cup VC33A1**

PVC: 111.574  
PU: 111.575

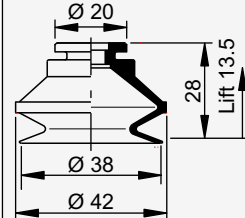


**Fitting:**  
VCA12: 111.359

Ø 38

**Vacuum Cup V40B**

NBR: 111.250  
SIL: 111.251  
SIL (FDA): 111.252

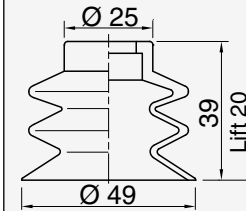


**Fitting:**  
VA30: 111.339  
VA30M: 111.340

Ø 49

**VacuumCup VC32ABC**

PVC: 111.604  
PU: 111.605

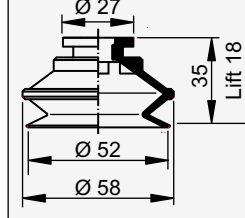


**Fitting:**  
VCA16: 111.363

Ø 52

**Vacuum Cup V50B**

NBR: 111.256  
SIL: 111.257  
SIL (FDA): 111.258

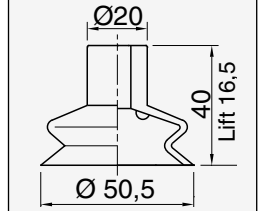


**Fitting:**  
VA50: 111.342  
VA50M: 111.343

Ø 50,5

**Vacuum Cup VC32C**

PVC: 111.616  
PU: 111.617

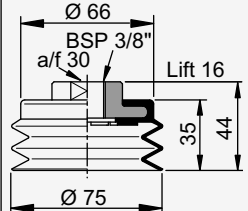


**Fitting:**  
VCA6: 111.354

Ø 75

**Vacuum Cup V75B**

NBR: 111.262  
SIL: 111.263

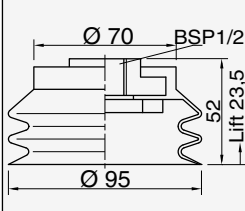


**With molded fitting (Alum.)**

Ø 95

**Saugn. VC104-3,75**

PVC: 111.622  
PU: 111.623

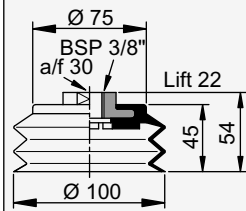


**With molded fitting (Alum.)**

Ø 100

**Vacuum Cup V100B**

NBR: 111.265  
SIL: 111.266

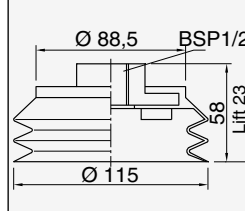


**With molded fitting (Alum.)**

Ø 115

**Vacuum Cup VC104-4,5**

PVC: 111.625  
PU: 111.626

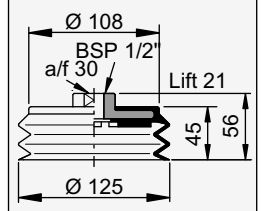


**With molded fitting (Alum.)**

Ø 125

**Vacuum Cup V125B**

NBR: 111.268  
SIL: 111.269

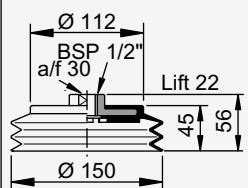


**With molded fitting (Alum.)**

Ø 150

**Vacuum Cup V150B**

NBR: 111.271  
SIL: 111.272

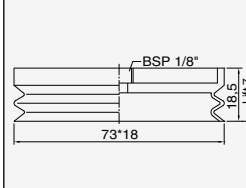


**With molded fitting (Alum.)**

18 \* 73

**Vacuum Cup VC188C1**

PVC: 111.712  
PU: 111.713

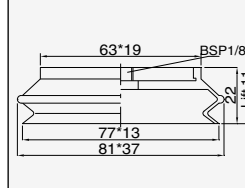


**With molded fitting (Alum.)**

33 \* 77

**Vacuum Cup VC32-3,05\*1,3**

PVC: 111.716  
PU: 111.717

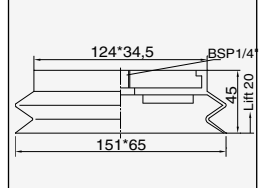


**With molded fitting (Alum.)**

65 \* 151

**Vacuum Cup VC32-2,5\*6**

PVC: 111.720  
PU: 111.721



**With molded fitting (Alum.)**

**Oval Bellow Vacuum Cups**

# Universal Vacuum Cups

Universal Vacuum Cups are used for flat and slightly curved surfaces. They can compensate level tolerances and rough surfaces in a better way than Flat Vacuum Cups can do.

## Materials

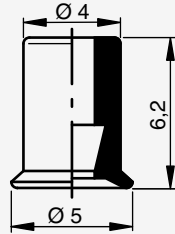
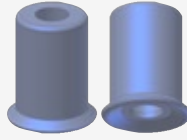
- NBR: Nitrile, oilresistant and durable, -20 to +120°C
- SIL: Silicone, for higher temperatures, -50 to + 220°C
- SIL (FDA): Silicone, suitable for foodstuff
- SIL (AS): Conductive Silicone (e.g. for Semiconductor handling)

The Fittings are listed on page 20 of this brochure.

Ø 5

### Vacuum Cup V4U

NBR: 111.328  
SIL (FDA): 111.329



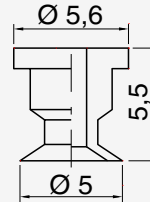
#### Fitting:

VA4: 111.333

Ø 5

### Vacuum Cup VCMini.200

PVC: 111.742  
PU: 111.743



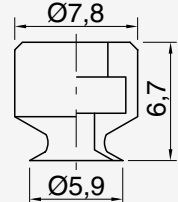
#### Fitting:

VCA2: 111.350

Ø 6

### Vacuum Cup VCNJ8

PVC: 111.764  
PU: 111.765



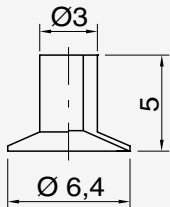
#### Fitting:

VCA5: 111.353

Ø 6,4

### Vacuum Cup VC167A

PVC: 111.728  
PU: 111.729



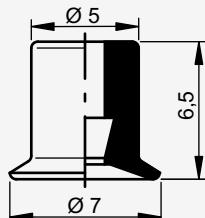
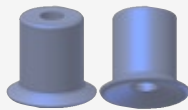
#### Fitting:

VCA2: 111.350

Ø 7

### Vacuum Cup V6U

NBR: 111.330  
SIL (FDA): 111.331



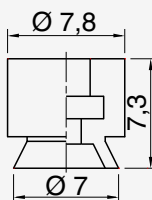
#### Fitting:

VA4: 111.333

Ø 7

### Vacuum Cup VCNJ12

PVC: 111.780  
PU: 111.781



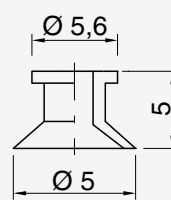
#### Fitting:

VCA4: 111.352

Ø 8

### Vacuum Cup VCMini

PVC: 111.738  
PU: 111.739



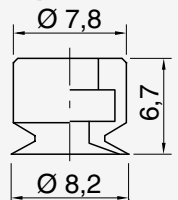
#### Fitting:

VCA1: 111.349

Ø 8,2

### Vacuum Cup VCNJ9

PVC: 111.768  
PU: 111.769



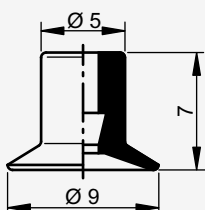
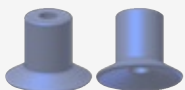
#### Fitting:

VCA5: 111.353

Ø 9

### Vacuum Cup V8U

NBR: 111.379  
SIL (FDA): 111.380



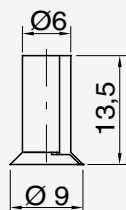
#### Fitting:

VA4: 111.333

Ø 9

### Vacuum Cup VC161C

PVC: 111.692  
PU: 111.693



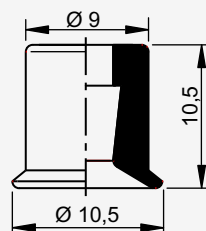
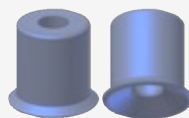
#### Fitting:

VA10: 111.334

Ø 10

### Vacuum Cup V10U

NBR: 111.325  
SIL: 111.326  
SIL (FDA): 111.327



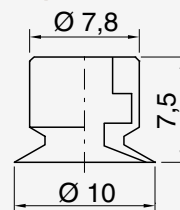
#### Fitting:

VA10: 111.334

Ø 10

### Vacuum Cup VCNJ10

PVC: 111.772  
PU: 111.773



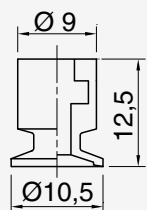
#### Fitting:

VCA5: 111.353

Ø 10,5

### Vacuum Cup VCNJ1

PVC: 111.746  
PU: 111.747



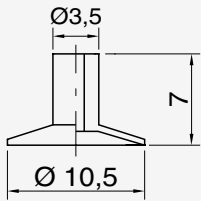
#### Fitting:

VA10: 111.334

Ø 10,5

**Vacuum Cup VC167**

PVC: 111.724  
PU: 111.725



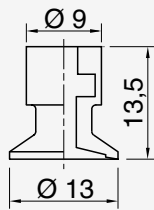
**Fitting:**

VCA2: 111.350

Ø 13

**Vacuum Cup VCNJ2**

PVC: 111.750  
PU: 111.751



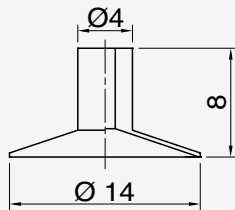
**Fitting:**

VA10: 111.334

Ø 14

**Vacuum Cup VC167C**

PVC: 111.734  
PU: 111.735



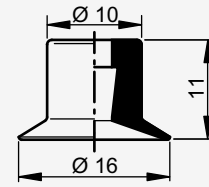
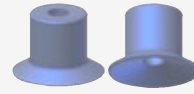
**Fitting:**

VCA2: 111.350

Ø 16

**Vacuum Cup V15U**

NBR: 111.382  
SIL (FDA): 111.383



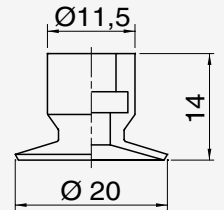
**Fitting:**

VA10: 111.334

Ø 20

**Vacuum Cup VC22**

PVC: 111.674  
PU: 111.675



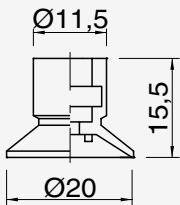
**Fitting:**

VCA11: 111.358

Ø 20

**Vacuum Cup VC119B**

PVC: 111.650  
PU: 111.651



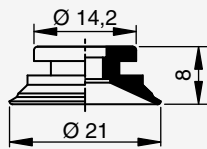
**Fitting:**

VCA11: 111.358

Ø 21

**Vacuum Cup V20U**

NBR: 111.385  
SIL (FDA): 111.386



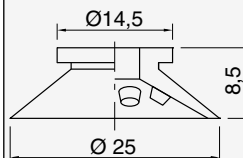
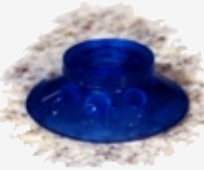
**Fitting:**

VA20: 111.336  
VA20M: 111.337

Ø 25

**Vacuum Cup VC36B**

PVC: 111.640  
PU: 111.641



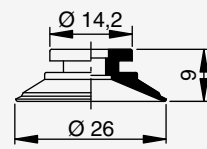
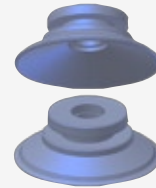
**Fitting:**

VA20: 111.336

Ø 26

**Vacuum Cup V25U**

NBR: 111.388  
SIL (FDA): 111.389



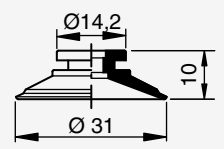
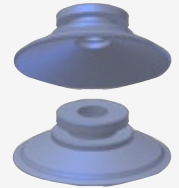
**Fitting:**

VA20: 111.336  
VA20M: 111.337

Ø 31

**Vacuum Cup V30U**

NBR: 111.391  
SIL (FDA): 111.392



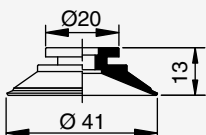
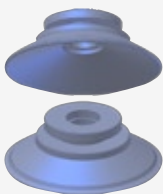
**Fitting:**

VA20: 111.336  
VA20M: 111.337

Ø 41

**Vacuum Cup V40U**

NBR: 111.394  
SIL (FDA): 111.395



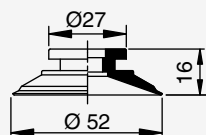
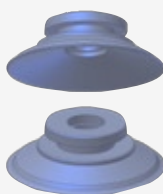
**Fitting:**

VA30: 111.339  
VA30M: 111.340

Ø 52

**Vacuum Cup V50U**

NBR: 111.398  
SIL (FDA): 111.399



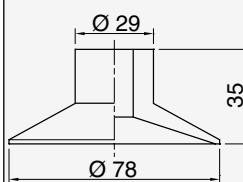
**Fitting:**

VA50: 111.342  
VA50M: 111.343

Ø 76

**Vacuum Cup VC30**

PVC: 111.696  
PU: 111.697



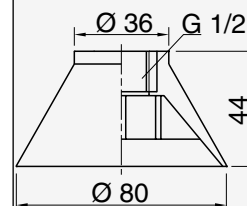
**Fitting:**

VCA15: 111.362

Ø 80

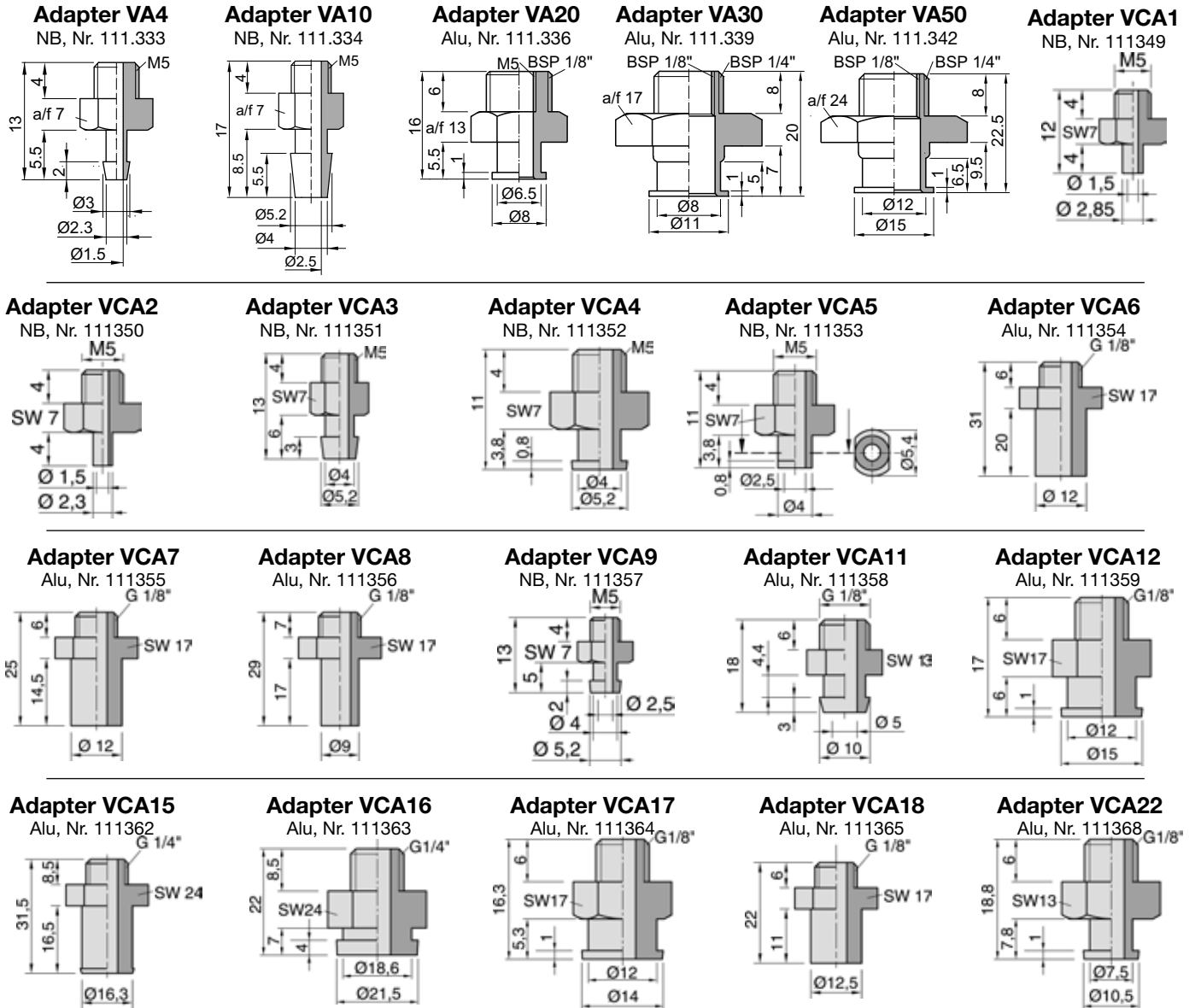
**Vacuum Cup VC72**

PVC: 111.654  
PU: 111.655

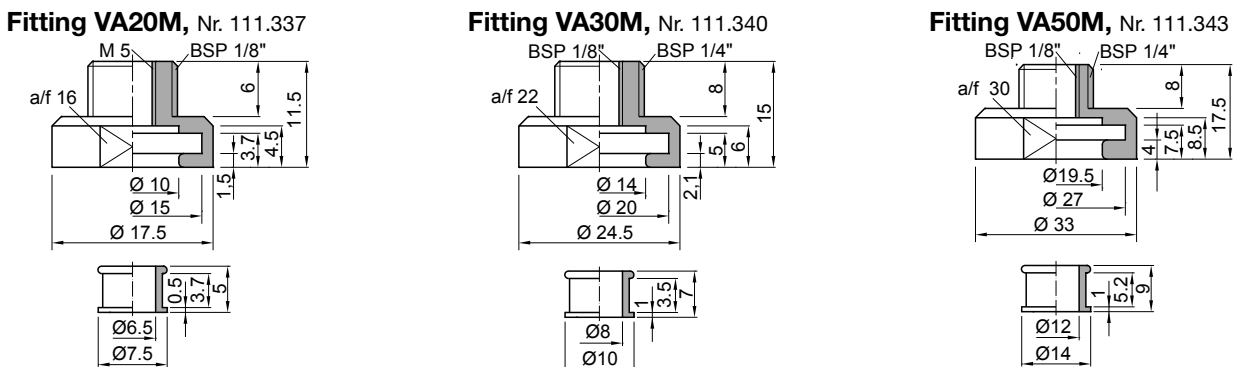


**With molded fitting (Alum.)**

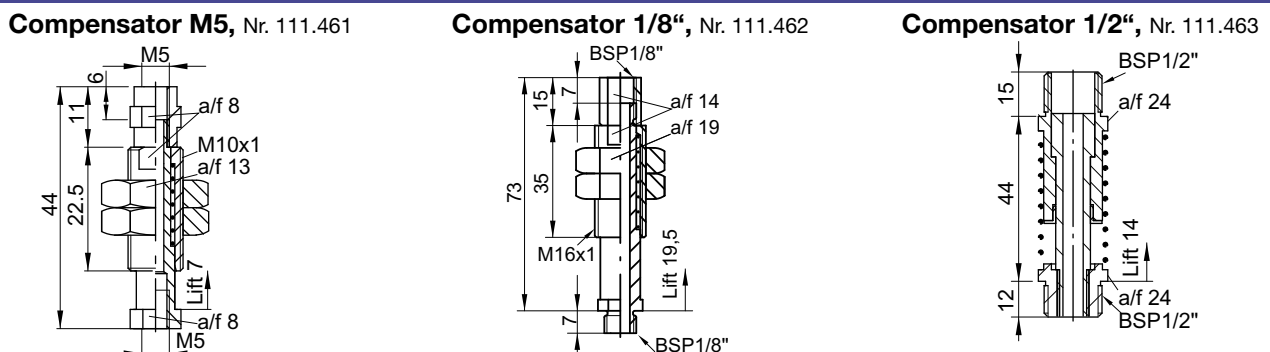
## Fittings: Plug Fitting (Alu = anodized Aluminium, NB = nickelplated Brass)



## Fittings with internal plug (use with higher lifting forces), anodized Aluminium



## Level Compensators





## VACUUM accessories

In our extensive accessory program you will find nearly everything for your vacuum application. Please ask us for additional information material.

### Vacuum switches and controls

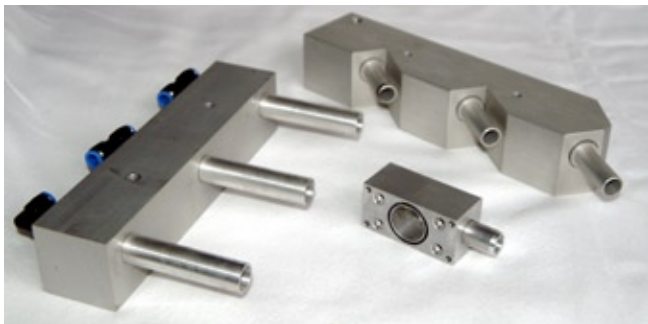
Our program includes purely pneumatic, electric and digital vacuum switches. Choose variants with two separately adjustable switching points or adjustable hysteresis. Measure the present vacuum with vacuum switches with analogous output. Use our vacuum controls if you want to keep the vacuum in a previously adjusted target area without additional control requirements. The sensors automatically takes over the control of the solenoid valves.



**Vacuum filters** – A wide variety of filters are available for your vacuum application.

### Vacuum flanges

Ask for special design flanges according to your individual specifications. We can quickly manufacture and supply high quality low cost flanges to your exact requirements.



### Customized Vacuum Pumps, Venturis and integrated systems

For special demands, we develop and design customized vacuum pumps, e.g. in a special size, with an individual characteristics, certain flow rates, in special materials etc.

If you require a Vacuum Pump completely pre-installed with other components like switches, valves, sensors, a control and/or a mounting frame, come and talk to us about our solutions we could provide.

# Suction air flow and evacuation times at different operating pressures

## MULTIJECTOR® M and G: optimum 5.6 bar

	operating pressure (bar)	max. Vacuum (mbar)	compr. air consump. (NI/min)	Suction air flow (in NI/min) at the respective Vacuum (in mbar)										Time in Seconds to evacuate a 1 m³ volume from atmospheric pressure to stated vacuum level (in mbar)								
				0	-100	-200	-300	-400	-500	-600	-700	-800	-100	-200	-300	-400	-500	-600	-700	-800	-900	
<b>M 90</b>	6	-910	93	413	245	145	88	45	34	23	14	5	14	42	94	198	360	608	1016	1932	5132	
	5.5	-910	86	395	226	140	76	45	35	23	13	6	16	46	98	214	368	612	1024	1896	5072	
	5	-850	80	380	205	125	63	46	33	16	6	4	16	50	118	232	384	676	1460	2624		
	4.5	-700	73	363	188	106	56	46	30	11	2		18	54	132	248	408	812	3744			
	4	-630	67	343	166	97	54	40	21	5			20	64	152	270	480	1320				
<b>M 180</b>	6	-910	186	825	490	290	176	90	68	46	28	10	7	21	47	99	180	304	508	966	2566	
	5.5	-910	172	790	452	280	152	90	70	46	26	12	8	23	49	107	184	306	512	948	2536	
	5	-850	160	760	410	250	126	92	66	32	12	8	8	25	59	116	192	338	730	1312		
	4.5	-700	146	725	375	212	111	92	60	22	4		9	27	66	124	204	406	1872			
	4	-630	134	685	332	193	108	80	42	10			10	32	76	135	240	660				
<b>M 270</b>	6	-910	279	1238	735	435	264	135	102	69	42	15	5	14	31	66	120	203	339	644	1710	
	5.5	-910	252	1185	678	420	228	135	105	69	39	18	5	15	33	71	123	204	341	632	1690	
	5	-850	240	1140	615	375	189	138	99	48	18	12	5	17	39	77	128	225	487	874		
	4.5	-700	219	1088	563	318	167	138	90	33	6		6	18	44	83	136	271	1248			
	4	-630	201	1028	498	290	162	120	63	15			7	21	51	90	160	440				
<b>M 360</b>	6	-910	372	1568	931	580	352	180	136	92	56	20	4	11	24	50	90	152	254	483	1283	
	5.5	-910	344	1501	859	560	304	180	140	92	52	24	4	12	25	54	92	153	256	474	1268	
	5	-850	320	1444	779	500	252	184	132	64	24	16	4	13	30	58	96	169	365	656		
	4.5	-700	292	1378	713	424	222	184	120	44	8		5	14	33	62	102	203	396			
	4	-630	268	1302	631	386	216	160	84	20			5	16	38	68	120	330				
<b>M 450</b>	6	-910	465	1959	1164	725	440	225	170	115	70	25	3	8	19	40	72	122	203	386	1026	
	5.5	-910	430	1876	1074	700	380	225	175	115	65	30	3	9	20	43	74	122	205	379	1014	
	5	-850	400	1805	974	625	315	230	165	80	30	20	3	10	24	46	77	135	292	525		
	4.5	-700	365	1722	891	530	278	230	150	55	10		4	11	26	50	82	162	749			
	4	-630	335	1627	789	483	270	200	105	25			4	13	30	54	96	264				
<b>M 540</b>	6	-910	558	2351	1397	870	528	270	204	138	84	30	2	7	16	33	60	101	169	322	854	
	5.5	-910	516	2252	1288	840	456	270	210	138	78	36	3	8	16	36	61	102	170	316	844	
	5	-850	480	2166	1169	750	378	276	198	96	36	24	3	8	20	39	64	113	243	437		
	4.5	-700	438	2066	1069	636	333	276	180	66	12		3	9	22	41	68	135	623			
	4	-630	402	1952	946	579	324	240	126	30			3	11	25	45	80	220				
<b>G 360</b>	6	-910	372	1980	950	593	361	180	136	92	54	23	2.0	9.0	20	43	79	137	230	451	1286	
	5.5	-910	344	1960	870	548	306	185	136	87	48	25	2.5	9.5	23	46	80	136	244	444	1271	
	5	-850	320	1940	795	508	263	180	135	70	28	20	2.5	10.0	25	50	86	151	317	604		
	4.5	-700	292	1850	685	445	227	161	121	50	5		3.5	11.5	29	55	93	178	781			
	4	-630	268	1750	620	365	226	161	94	24			5.0	13.0	33	62	108	265				
<b>G 540</b>	6	-910	558	2772	1425	890	542	270	204	138	81	35	1.3	6.0	13	28	53	91	153	301	857	
	5.5	-910	516	2744	1305	822	459	278	204	131	72	38	1.7	6.3	15	31	53	91	163	296	847	
	5	-850	480	2716	1193	762	395	270	203	105	42	30	2.7	6.7	16	33	57	101	211	403		
	4.5	-700	438	2590	1028	668	341	242	182	75	8		3.3	7.7	19	37	62	119	521			
	4	-630	402	2450	930	548	339	242	141	36			3.3	8.7	22	41	72	177				
<b>G 720</b>	6	-910	744	3350	1900	1185	721	359	272	184	107	46	1.0	4.5	10	21	40	69	115	226	643	
	5.5	-910	688	3250	1740	1096	612	369	272	173	96	51	1.3	4.8	11	23	40	68	122	222	636	
	5	-850	640	3200	1590	1016	526	359	270	140	56	39	1.3	5.0	12	25	43	76	159	302		
	4.5	-700	584	3050	1370	889	453	322	242	99	10		1.8	5.8	15	28	47	89	391			
	4	-630	536	2850	1240	729	451	322	187	47			2.5	6.5	16	31	54	133				
<b>G 900</b>	6	-910	930	4188	2375	1481	901	449	340	230	134	57	0.8	3.6	8	17	32	55	92	180	514	
	5.5	-910	860	4063	2175	1370	765	461	340	216	120	64	1.0	3.8	9	18	32	54	98	178	508	
	5	-850	800	4000	1988	1270	658	449	338	174	70	49	1.0	4.0	10	20	34	60	127	242		
	4.5	-700	730	3813	1713	1111	566	403	303	124	12		1.4	4.6	12	22	37	71	312			
	4	-630	670	3563	1550	911	564	403	234	59			2.0	5.2	13	25	43	106				
<b>G 1260</b>	6	-910	1302	5863	3325	2074	1262	628	476	322	187	80	0.6	2.6	6	12	23	39	66	129	367	
	5.5	-910	1204	5688	3045	1918	1071	646	476	303	168	89	0.7	2.7	6	13	23	39	70	127	363	
	5	-850	1120	5600	2783	1778	921	628	473	244	98	68	0.7	2.9	7	14	25	43	91	173		
	4.5	-700	1022	5338	2398	1556	793	564	424	173	17		1.4	3.3	8	16	27	51	223			
	4	-630	938	4988	2170	1276	789	564	327	83			1.4	3.7	9	18	31	76				
<b>G 1800</b>	6	-910	1860	8375	4750	2963	1803	898	680	460	268	114	0.4	1.8	4	9	16	27	46	90	257	
	5.5	-910	1720	8125	4350	2740	1530	923	680	433	240	127	0.5	1.9	5	9	16	27	49	89	254	
	5	-850	1600	8000	3975	2540	1315	898	675	349	140	98	0.5	2.0	5	10	17	30	63	121		
	4.5	-700	1460	7625	3425	2223	1133	805	605	248	24		0.7	2.3	6	11	19	36	156			
	4	-630	1340	7125	3100	1823	1128	805	468	118			1.0	2.6	7	12	22	53				
<b>G 2700</b>	6	-910	2790	12563	7125	4444	2704	1346	1020	690	401	171	0.3	1.2	3	6	11	18	31	60	171	
	5.5	-910	2580	12188	6525	4110	2295	1384	1020	649	360	191	0.3	1.3	3	6	11	18	33	59	169	
	5	-850	2400	12000	5963	3810	1973	1346	1013	523	209	146	0.3	1.3	3	7	11	20				

# Suction air flow and evacuation times at different operating pressures

## MULTIJECTOR® ML and GL: optimum 3.5 bar

	operating pressure (bar)	max. Vacuum (mbar)	compr. air consump. (NI/min)	Suction air flow (in NI/min) at the respective Vacuum (in mbar)										Time in Seconds to evacuate a 1 m <sup>3</sup> volume from atmospheric pressure to stated vacuum level (in mbar)								
				0	-100	-200	-300	-400	-500	-600	-700	-800	-100	-200	-300	-400	-500	-600	-700	-800	-900	
<b>ML 50</b>	4.5	-890	60	194	115	74	44	20	16	11	6	2	26	81	191	437	782	1256	2054	4005	20262	
	4	-900	56	189	99	65	31	20	16	12	7	2	29	92	234	506	848	1311	2073	3961		
	3.5	-910	50	181	93	52	25	21	17	12	6	2	32	100	272	528	857	1342	3567	5596	26862	
	3	-730	44	169	85	43	27	22	15	8			36	121	293	542	894	1579	4425			
	2.5	-620	39	156	74	33	28	19	9				40	150	333	611	1196	4888				
2	-480	33	137	60	30	19	6					54	198	469	1114							
<b>ML 100</b>	4.5	-890	120	388	229	148	87	39	32	23	13	3	13	41	95	218	391	628	1027	2002	10131	
	4	-900	112	377	197	130	62	40	33	24	14	4	15	46	117	253	424	655	1036	1980		
	3.5	-910	100	361	185	103	50	41	34	24	13	3	16	50	136	264	429	671	1212	2798	13431	
	3	-730	88	337	170	85	54	44	31	16			18	60	147	271	447	790	2213			
	2.5	-620	78	312	147	66	55	39	18				20	75	167	306	598	2444				
2	-480	66	274	120	61	37	13					27	99	235	557							
<b>ML 150</b>	4.5	-890	180	582	344	222	131	59	48	34	19	5	9	27	64	146	261	419	685	1335	6754	
	4	-900	168	566	296	195	93	60	49	36	21	6	10	31	78	169	283	428	691	1320		
	3.5	-910	150	542	278	155	75	62	51	36	19	5	11	33	91	176	286	447	1189	1865	8954	
	3	-730	132	506	255	128	81	66	46	23			12	40	98	181	298	426	715	1475		
	2.5	-620	117	468	221	98	83	58	27				13	50	111	204	399	1629				
2	-480	99	411	180	91	56	19					18	66	156	371							
<b>ML 200</b>	4.5	-890	240	776	458	296	174	78	64	45	25	6	7	20	48	109	196	314	514	1001	5066	
	4	-900	224	754	394	260	124	80	65	48	28	8	7	23	59	126	212	328	518	990		
	3.5	-910	200	722	370	206	100	82	68	48	25	6	8	25	68	132	214	336	892	1399	6716	
	3	-730	176	674	340	170	108	88	68	31			9	30	73	136	224	395	1106			
	2.5	-620	156	624	294	131	110	77	36				10	38	83	153	299	1222				
2	-480	132	548	240	121	74	25					14	50	117	279							
<b>ML 250</b>	4.5	-890	300	970	573	370	218	98	80	56	31	8	5	16	38	87	156	251	411	801	4052	
	4	-900	280	943	493	325	155	100	81	60	35	10	6	18	47	101	170	262	414	792		
	3.5	-910	250	903	463	258	125	103	85	60	31	8	7	20	54	106	172	268	485	1119	5372	
	3	-730	220	843	425	213	135	110	76	39			6	24	59	108	179	316	885			
	2.5	-620	195	780	368	164	138	96	45				8	30	67	122	239	978				
2	-480	165	685	300	151	93	31					11	40	94	223							
<b>ML 300</b>	4.5	-890	360	1164	687	444	261	117	96	68	38	9	4	14	32	73	130	209	342	667	3377	
	4	-900	336	1131	591	390	186	120	98	72	42	12	5	15	39	84	141	218	345	660		
	3.5	-910	300	1083	555	309	150	123	102	72	38	9	5	17	45	88	143	224	404	933	4477	
	3	-730	264	1011	510	255	162	132	92	47			6	20	49	90	149	263	738			
	2.5	-620	234	936	441	197	165	116	54				7	25	56	102	199	815				
2	-480	198	822	360	182	111	38					9	33	78	186							
<b>GL 200</b>	4.5	-890	240	1036	492	311	177	76	62	45	24	8	4	14	32	73	130	209	342	667	3377	
	4	-900	224	988	432	272	128	78	64	47	27	9	5	15	39	84	141	218	345	660		
	3.5	-910	200	916	389	228	99	80	65	48	27	6	6	20	54	106	172	268	485	1119	5372	
	3	-730	172	854	364	183	106	82	61	34	8		7	24	59	108	179	316	885			
	2.5	-620	156	789	318	138	108	73	37	6			8	30	67	122	239	978				
2	-480	132	700	248	122	75	30					11.5	41.5	94	224							
<b>GL 300</b>	4.5	-890	360	1554	738	466	266	114	93	68	36	12	3.7	12.0	26	57	111	196	321	681	3440	
	4	-900	336	1482	648	407	191	117	96	71	41	14	4.0	13.0	30	70	120	193	319	651		
	3.5	-910	300	1373	584	341	148	120	98	72	41	9	4.3	14.0	37	77	127	199	329	772	3462	
	3	-730	258	1281	546	275	158	123	92	51	12		5.0	17.3	43	79	114	227	608			
	2.5	-620	234	1184	477	207	162	110	56	9			6.3	21.0	48	86	166	509				
2	-480	198	1049	372	182	112	45					7.7	27.7	63	149							
<b>GL 400</b>	4.5	-890	480	2072	984	621	354	153	124	90	49	17	2.8	9.0	19	43	83	147	241	511	2580	
	4	-900	448	1976	864	543	255	157	128	94	54	18	3.0	9.8	23	52	90	145	239	488		
	3.5	-910	400	1831	778	455	197	160	131	95	53	13	3.3	10.5	28	58	95	150	247	579	2597	
	3	-730	344	1708	728	366	211	165	123	68	15		3.8	13.0	32	59	86	171	456			
	2.5	-620	312	1578	636	276	216	146	74	12			4.8	15.8	36	65	125	382				
2	-480	264	1399	496	243	149	61					5.8	20.8	47	112							
<b>GL 500</b>	4.5	-890	600	2590	1230	776	442	191	155	112	61	21	2.2	7.2	15	34	66	118	192	409	2064	
	4	-900	560	2470	1079	678	318	196	160	117	68	23	2.4	7.8	18	42	72	116	191	390		
	3.5	-910	500	2288	972	568	246	200	164	119	66	16	2.6	8.4	22	46	76	120	198	463	2077	
	3	-730	430	2134	909	457	263	206	153	85	19		3.0	10.4	26	47	68	136	365			
	2.5	-620	390	1972	794	344	270	183	93	15			3.8	12.6	29	52	100	305				
2	-480	330	1748	620	303	186	76					4.6	16.6	38	90							
<b>GL 700</b>	4.5	-890	840	3626	1722	1086	619	267	217	157	85	29	1.6	5.1	11	24	47	84	137	292	1474	
	4	-900	784	3458	1511	949	445	274	224	164	95	32	1.7	5.6	13	30	51	83	137	279		
	3.5	-910	700	3203	1361	795	344	280	230	167	92	22	1.9	6.0	16	33	54	85	141	331	1484	
	3	-730	602	2988	1273	640	368	288	214	119	27		2.1	7.4	18	34	49	97	261			
	2.5	-620	546	2761	1112	482	378	256	130	21			2.7	9.0	20	37	71	218				
2	-4																					

# VAGUUM Pumps & VAGUUM Components

## On site tests, demonstrations, lab analysis, seminars and customer training

Volkman and our partners would like to demonstrate more of the world of the Volkman Multijector vacuum pumps and components. We have demonstration and test facilities available in Soest and at many of our partners, where clients can see our Vacuum Pumps in action. Furthermore, we encourage "hands on" experience on all equipment. Vacuum handling tests and further ongoing evaluations can be undertaken as a special additional service either onsite or in our labs. A complete test summary and quotation are provided for the suitable system. Ask for our "Test Packs".

We also offer industrial seminars, training and company workshops tailored to your needs. We want to give you and your team the basic tools required to identify in your plant where and how Multijectors and other vacuum components from Volkman could increase production quality and reduce costs: increase your production profit and save money by using Vacuum Pumps and Components from Volkman.

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