

MULTI-STAGE VACUUM GENERATORS - GENERAL INFORMATION

Our multi-stage vacuum generators produce a maximum vacuum of 90%, equal to a final vacuum level of 100 mbar abs., with different suction capacities. They operate by use of compressed air from 1 to 6 bar (g).

Working principle

Each ejector is based on the Venturi principle: the supply fluid (compressed air) is led high speed by a convergent pipe into the fluid to be extracted (volume of the air to be sucked). This mixture is then led into two or three divergent pipes, where its kinetic energy is transformed into pressure energy for it to enter in the environment at a higher pressure (atmospheric pressure at the exhaust).

Technical features

The main asset of multi-stage vacuum generators is its ability to exploit the kinetic energy of the supply compressed air via several specially dimensioned in-line ejectors, before releasing it in the atmosphere. This system allows, given the same capacity, a reduced compressed air consumption compared to the single-stage vacuum generators.

The suction capacity is indirectly proportional to the differential between the pressure of the fluid to be sucked and the external (atmospheric) pressure.

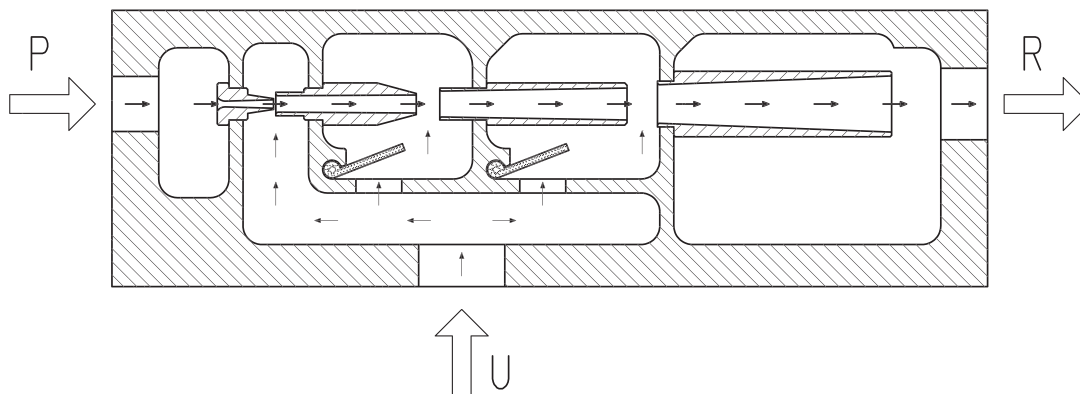
The reduced size and weight make multi-stage vacuum generators compact in relation to their great suction capacity.

The absence of moving parts make them particularly silent and allow them to be used continuously, without developing heat.

Being supplied exclusively by compressed air, these vacuum generators are explosion-proof and can be used in work environments with temperatures ranging from -20 to +80 °C.

They are fully made with stainless materials.

Thanks to all these features, a good filtration of the supply and sucked compressed air is sufficient to make these generators are fully maintenance-free.



P = Compressed air connection

R = Exhaust

U = Vacuum connection

MULTI-STAGE VACUUM GENERATORS SERIES M

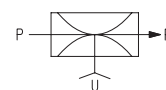
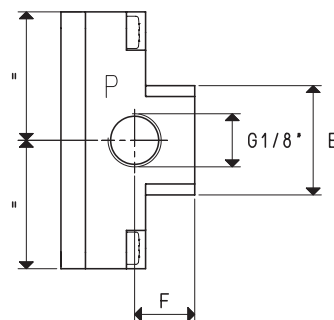
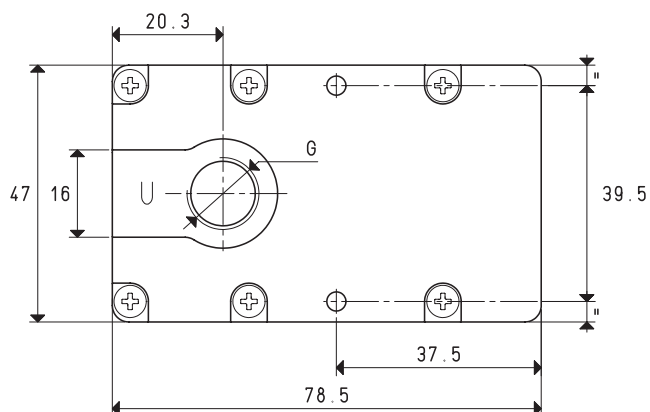
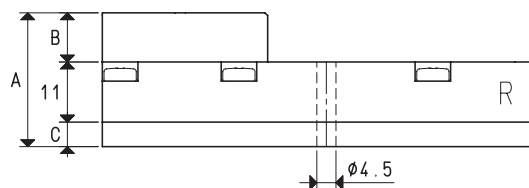


These vacuum generators feature multiple state of the art ejectors assembled onto small modules. One of their distinctive features is their great suction capacity compared to their reduced size.

With a compressed air supply of $4 \div 5$ bar (g), they can produce a maximum vacuum equal to 85% and a suction capacity of $3.6 \div 18$ cum/h, according to the number of modules.

The silencer is built-in.

They are fully made with slightly anodised alloys and can be installed in any position. The multi-stage vacuum generators in this range are suited for interconnecting vacuum cup gripping systems and, in particular, in the industrial robotics sector, which requires equipment with excellent working performance, but with weight and size reduced to the minimum.



P=COMPRESSED AIR CONNECTION

R=EXHAUST

U=VACUUM CONNECTION

Art.		M 3						M 7
Quantity of sucked air	cum/h	3	3.4	3.6	5.4	5.8	6.2	
Max. vacuum level	-KPa	62	82	85	62	82	85	
Final pressure	mbar abs.	380	180	150	380	180	150	
Supply pressure	bar (g)	3	4	5	3	4	5	
Air consumption	NI/s	0.5	0.7	0.8	0.8	1.2	1.4	
Working temperature	°C			-10 / +80			-10 / +80	
Noise level	dB(A)			64			70	
Weight	g			109			111	
A				24.5			25.5	
B				9			10	
C				4.5			4.5	
E	Ø			20			24	
F				11			12	
G	Ø			G1/4"			G3/8"	
Spare parts								
Sealing kit and reed valve	art.			00 KIT M 3			00 KIT M 7	

Note: All the vacuum data indicated in the table are valid at the normal atmospheric pressure of 1013 mbar and are obtained with a constant supply pressure.

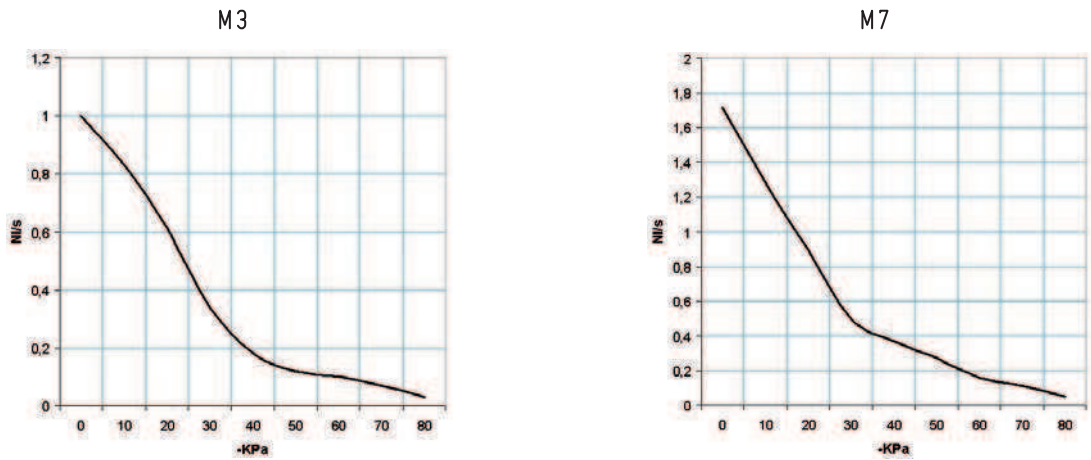
Conversion ratio: inch = $\frac{\text{mm}}{25.4}$; pounds = $\frac{\text{g}}{453.6}$ = $\frac{\text{Kg}}{0.4536}$

GAS-NPT thread adapters available at page 1.117

3D drawings available at www.vuototecnica.net

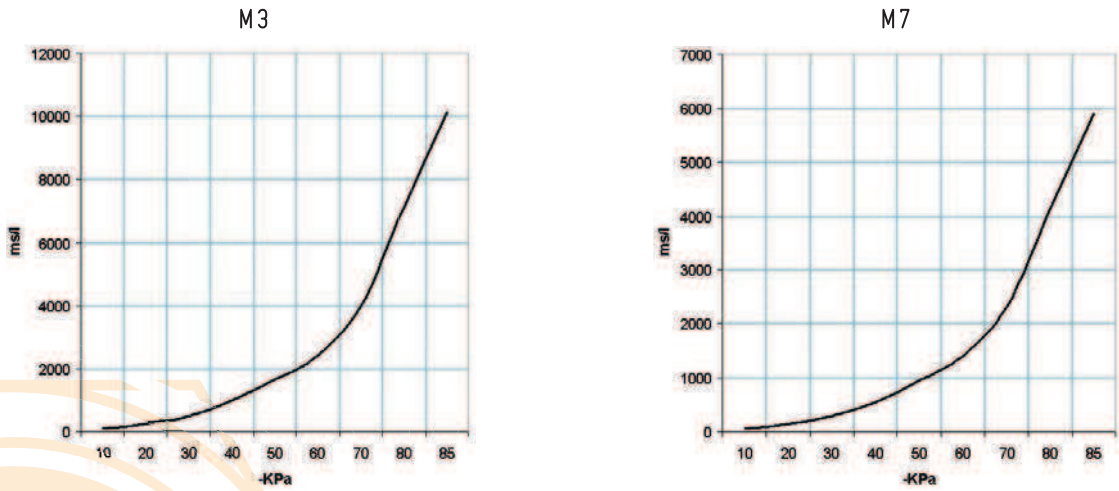
MULTI-STAGE VACUUM GENERATORS M 3 and M 7

Air capacity (NI/s) at different vacuum levels (-Kpa)



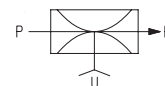
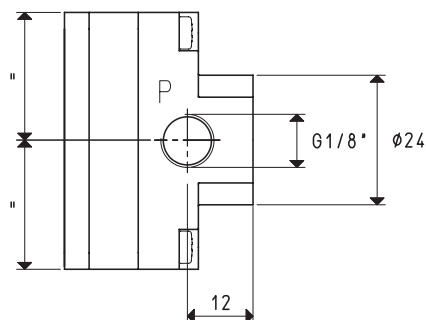
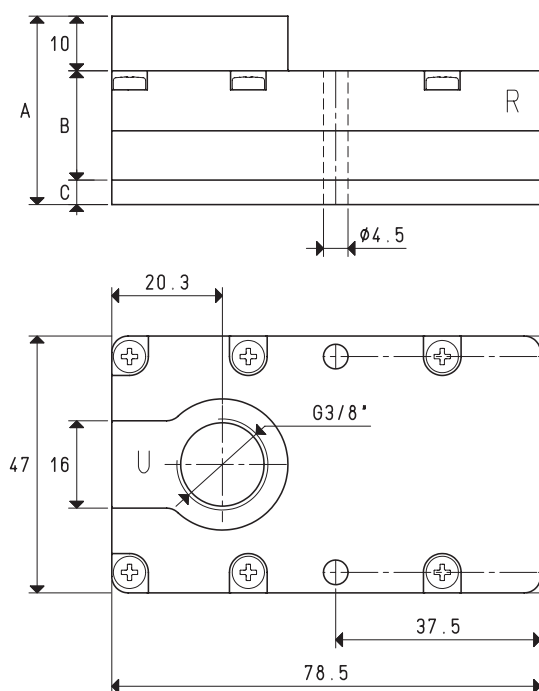
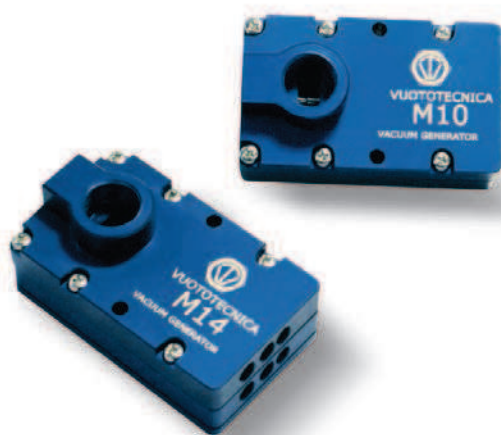
Generator	Supply press.	Air consumption	Air capacity (NI/s) at different vacuum levels (-KPa)										Max. vacuum level
art.	bar (g)	NI/s	0	10	20	30	40	50	60	70	80	-KPa	
M 3	5.0	0.8	1.00	0.83	0.61	0.34	0.18	0.12	0.10	0.07	0.03	85	
M 7	5.0	1.4	1.72	1.28	0.89	0.50	0.37	0.27	0.16	0.11	0.05	85	

Evacuation time (ms/l=s/m³) at different vacuum levels (-Kpa)



Generator art.	Supply press. bar (g)	Air consumption Nl/s	Evacuation time (ms/l = s/m³) at different vacuum levels (-KPa)									Max. vacuum level -KPa
			10	20	30	40	50	60	70	80	85	
M 3	5.0	0.8	106	244	491	969	1642	2398	4004	7128	10122	85
M 7	5.0	1.4	61	142	285	563	954	1394	2328	4144	5885	85

MULTI-STAGE VACUUM GENERATORS M 10, M 14 and M 18



P=COMPRESSED AIR CONNECTION		R=EXHAUST		U=VACUUM CONNECTION		U				
Art.		M 10				M 14			M 18	
Quantity of sucked air	cum/h	7.7	8.5	9.4	10.2	11.6	12.6	14.8	16.5	18.0
Max. vacuum level	-KPa	62	82	85	62	82	85	62	82	85
Final pressure	mbar abs.	380	180	150	380	180	150	380	180	150
Supply pressure	bar (g)	3	4	5	3	4	5	3	4	5
Air consumption	NI/s	1.2	1.6	1.9	1.7	2.1	2.5	2.3	2.9	3.6
Working temperature	°C	-10 / +80				-10 / +80			-10 / +80	
Noise level	dB(A)	72				72			76	
Weight	g	144				145			150	
A		34.5				34.5			44.5	
B		20				20			30	
C		4.5				4.5			4.5	
Spare parts										
Sealing kit and reed valve	art.	00 KIT M 10				00 KIT M 14			00 KIT M 18	

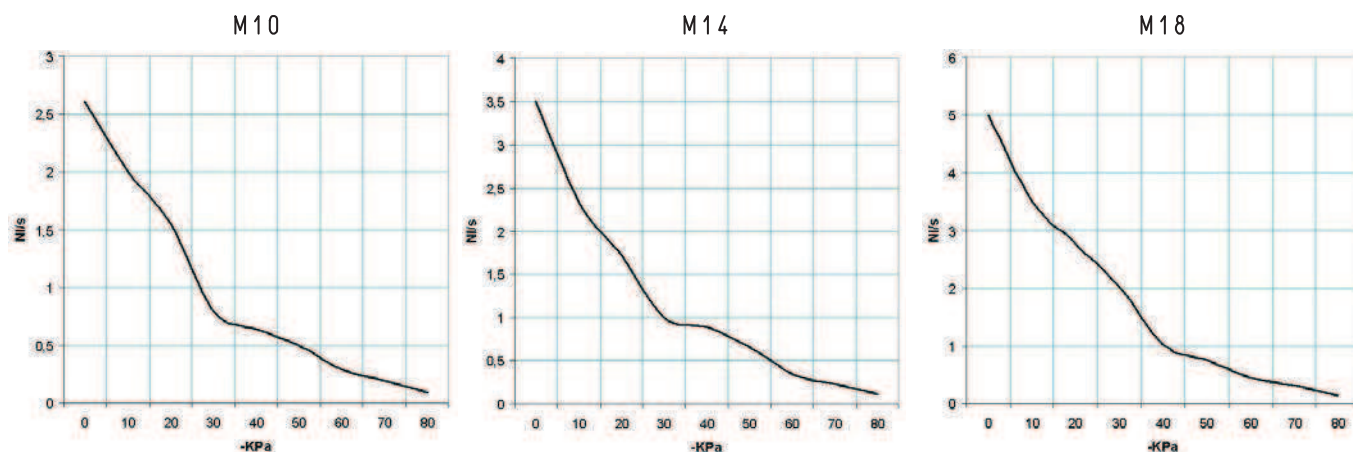
Note: All the vacuum data indicated in the table are valid at the normal atmospheric pressure of 1013 mbar and are obtained with a constant supply pressure.

Conversion ratio: inch = $\frac{mm}{25.4}$; pounds = $\frac{g}{453.6}$ = $\frac{Kg}{0.4536}$

GAS-NPT thread adapters available at page 1.117

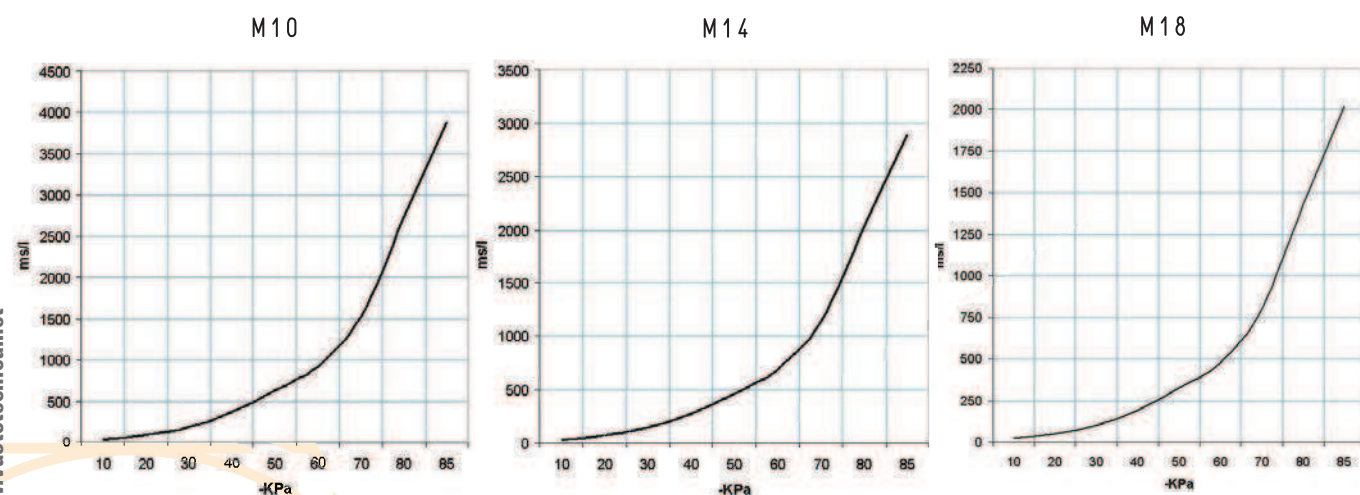
MULTI-STAGE VACUUM GENERATORS M 10, M 14 and M 18

Air capacity (NI/s) at different vacuum levels (-Kpa)



Generator art.	Supply press. bar (g)	Air consumption NI/s	Air capacity (NI/s) at different vacuum levels (-KPa)										Max. vacuum level -KPa
			0	10	20	30	40	50	60	70	80		
M 10	5.0	1.9	2.61	2.00	1.55	0.80	0.64	0.50	0.29	0.19	0.09	85	
M 14	5.0	2.5	3.50	2.33	1.72	1.00	0.89	0.67	0.35	0.24	0.11	85	
M 18	5.0	3.6	5.00	3.50	2.78	2.02	1.02	0.75	0.44	0.30	0.14	85	

Evacuation time (ms/l=s/m³) at different vacuum levels (-Kpa)



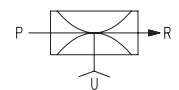
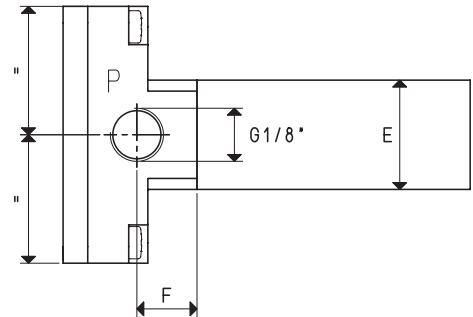
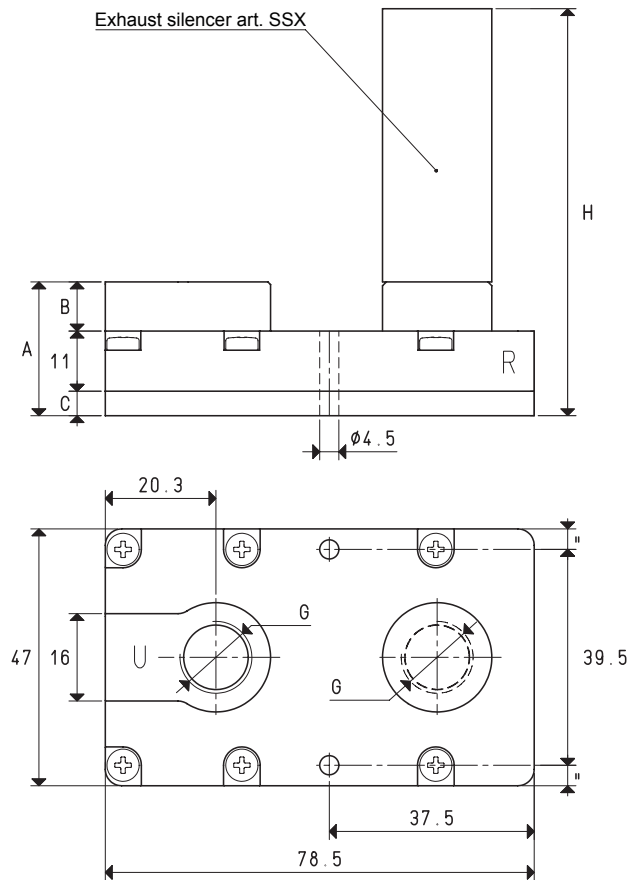
Generator art.	Supply press. bar (g)	Air consumption Nl/s	Evacuation time (ms/l = s/m³) at different vacuum levels (-KPa)									Max. vacuum level
			10	20	30	40	50	60	70	80	85	-KPa
M 10	5.0	1.9	40	93	188	371	629	918	1534	2731	3878	85
M 14	5.0	2.5	30	69	140	276	469	685	1144	2036	2892	85
M 18	5.0	3.6	21	48	98	193	327	478	799	1423	2020	85

MULTI-STAGE VACUUM GENERATORS SERIES M.. SSX

These vacuum generators share the same technical features as the others of the M series described above. Their distinctive feature is their silent operation.

In fact, along with the built-in silencer, they also have an external SSX silencer for a further noise reduction.

These generators are particularly recommended in work environments where the noise level must be kept within very low values.



P=COMPRESSED AIR CONNECTION

R=EXHAUST

U=VACUUM CONNECTION

Art.		M 3 SSX						M 7 SSX	
Quantity of sucked air	cum/h	3.0	3.4	3.6	5.4	5.8	6.2		
Max. vacuum level	-KPa	62	82	85	62	82	85		
Final pressure	mbar abs.	380	180	150	380	180	150		
Supply pressure	bar (g)	3	4	5	3	4	5		
Air consumption	NI/s	0.5	0.7	0.8	0.8	1.2	1.4		
Working temperature	°C			-10 / +80			-10 / +80		
Noise level	dB(A)			52			58		
Weight	g			109			111		
A				24.5			25.5		
B				9			10		
C				4.5			4.5		
E	ϕ			20			29		
F				11			12		
G	ϕ			G1/4"			G3/8"		
H				74.5			97.5		
Spare parts									
Silencer	art.			SSX 1/4"			SSX 3/8"		
Sealing kit and reed valve	art.			00 KIT M 3			00 KIT M 7		

Note: All the vacuum data indicated in the table are valid at the normal atmospheric pressure of 1013 mbar and are obtained with a constant supply pressure.

Conversion ratio: inch = $\frac{\text{mm}}{25.4}$; pounds = $\frac{\text{g}}{453.6}$ = $\frac{\text{Kg}}{0.4536}$

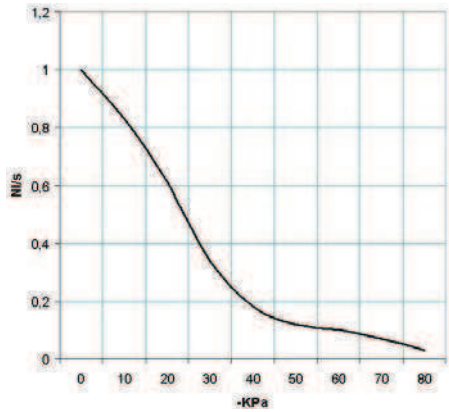
GAS-NPT thread adapters available at page 1.117

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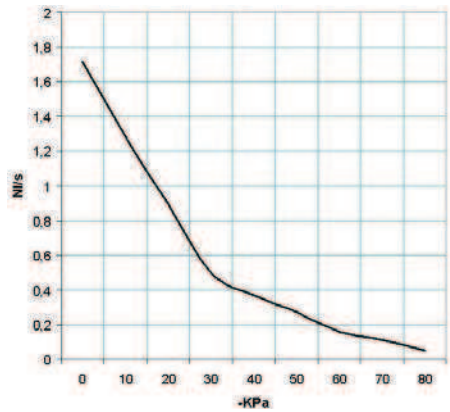
MULTI-STAGE VACUUM GENERATORS M 3 SSX and M 7 SSX

Air capacity (NI/s) at different vacuum levels (-Kpa)

M3 SSX



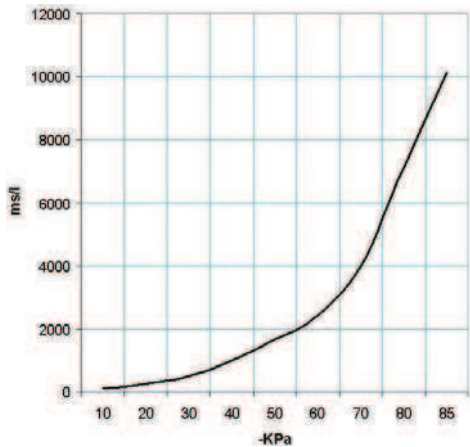
M7 SSX



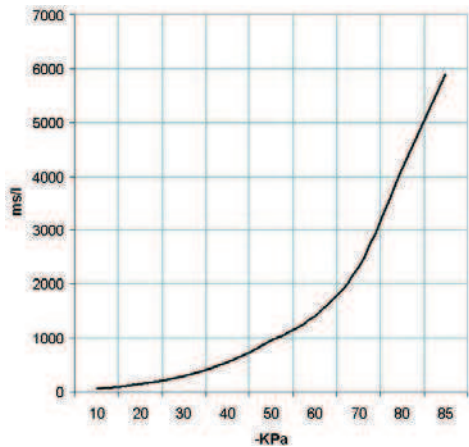
Generator art.	Supply press. bar (g)	Air consumption NI/s	Air capacity (NI/s) at different vacuum levels (-KPa)										Max. vacuum level
			0	10	20	30	40	50	60	70	80	-KPa	
M 3 SSX	5.0	0.8	1.00	0.83	0.61	0.34	0.18	0.12	0.10	0.07	0.03	85	
M 7 SSX	5.0	1.4	1.72	1.28	0.89	0.50	0.37	0.27	0.16	0.11	0.05	85	

Evacuation time (ms/l=s/m³) at different vacuum levels (-Kpa)

M3 SSX



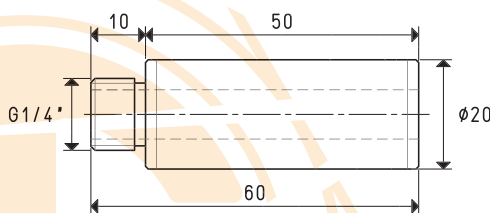
M7 SSX



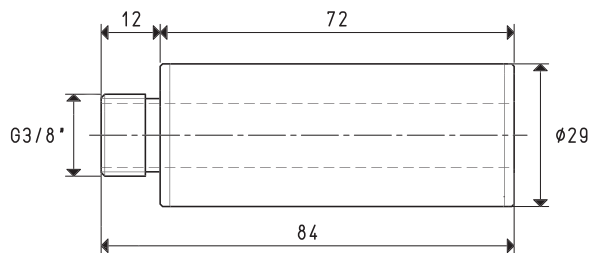
Generator art.	Supply press. bar (g)	Air consumption NI/s	Evacuation time (ms/l = s/m³) at different vacuum levels (-kPa)									Max. vacuum level
			10	20	30	40	50	60	70	80	85	-kPa
M 3 SSX	5.0	0.8	106	244	491	969	1642	2398	4004	7128	10122	85
M 7 SSX	5.0	1.4	61	142	285	563	954	1394	2328	4144	5885	85

Accessories included

Silencer art. SSX 1/4" on M3

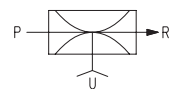
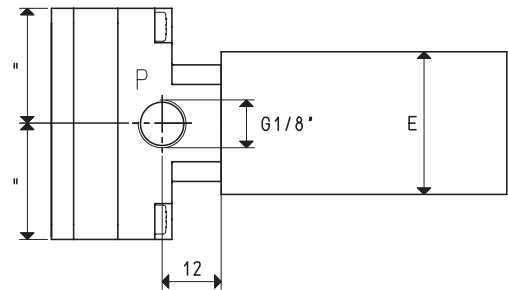
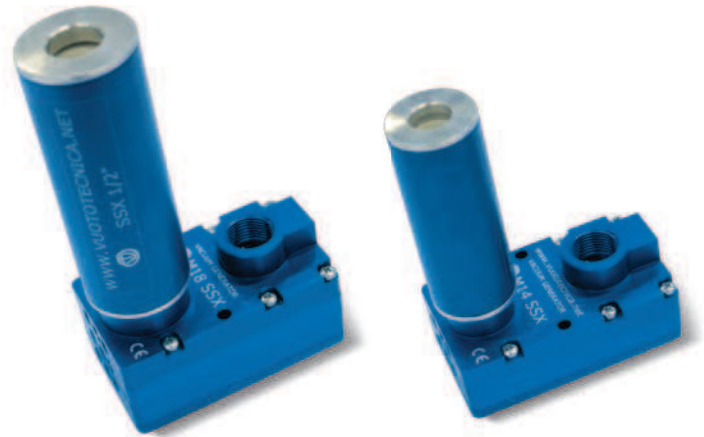
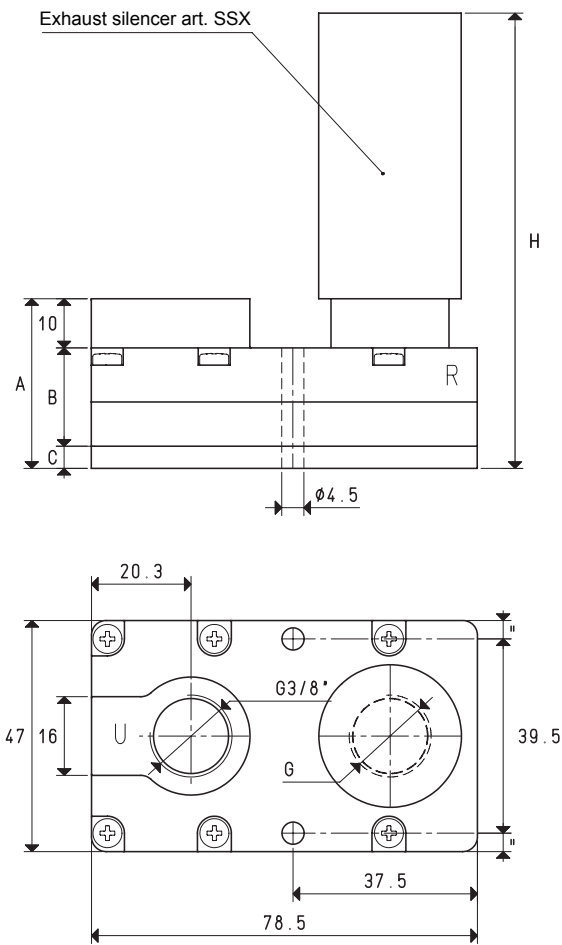


Silencer art. SSX 3/8" on M7



3D drawings available at www.vuototecnica.net

MULTI-STAGE VACUUM GENERATORS M 10 SSX, M 14 SSX and M 18 SSX



P=COMPRESSED AIR CONNECTION		R=EXHAUST	U=VACUUM CONNECTION							
Art.		M 10 SSX		M 14 SSX		M 18 SSX				
Quantity of sucked air	cum/h	7.7	8.5	9.4	10.2	11.5	12.6	14.8	16.5	18.0
Max. vacuum level	-KPa	62	82	85	62	82	85	62	82	85
Final pressure	mbar abs.	380	180	150	380	180	150	380	180	150
Supply pressure	bar (g)	3	4	5	3	4	5	3	4	5
Air consumption	NI/s	1.2	1.6	1.9	1.7	2.1	2.5	2.3	2.9	3.6
Working temperature	°C	-10 / +80		-10 / +80		-10 / +80				
Noise level	dB(A)	60		62		66				
Weight	g	144		145		150				
A		34.5		34.5		44.5				
B		20		20		30				
C		4.5		4.5		4.5				
E	Ø	29		29		35				
G	Ø	G3/8"		G3/8"		G1/2"				
H		106.5		106.5		136.5				
Spare parts										
Silencer	art.	SSX 3/8"		SSX 3/8"		SSX 1/2"				
Sealing kit and reed valve	art.	00 KIT M 10		00 KIT M 14		00 KIT M 18				

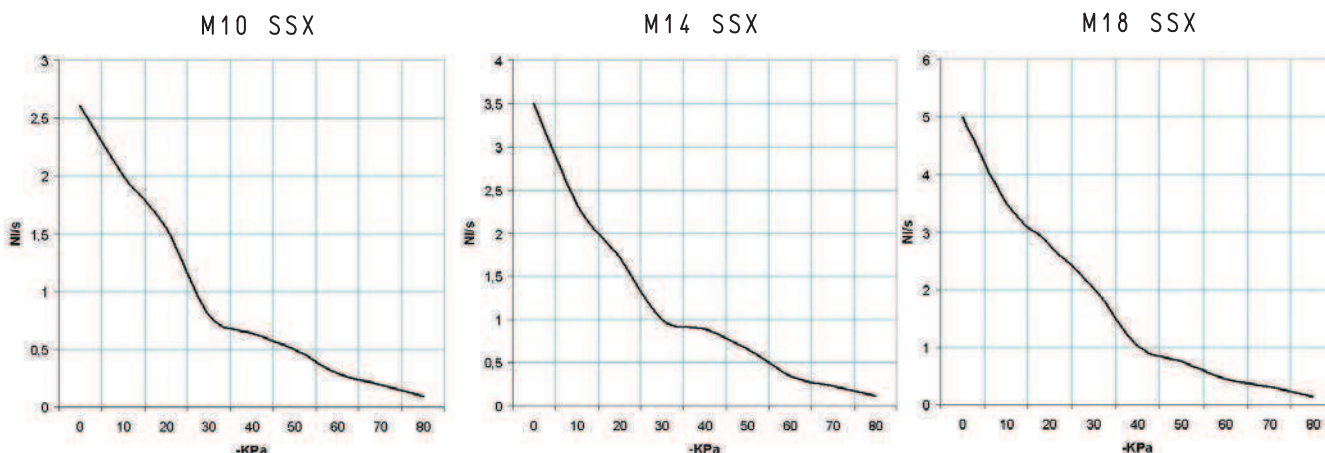
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Conversion ratio: inch = $\frac{\text{mm}}{25.4}$; pounds = $\frac{\text{g}}{453.6} = \frac{\text{Kg}}{0.4536}$

GAS-NPT thread adapters available at page 1.117

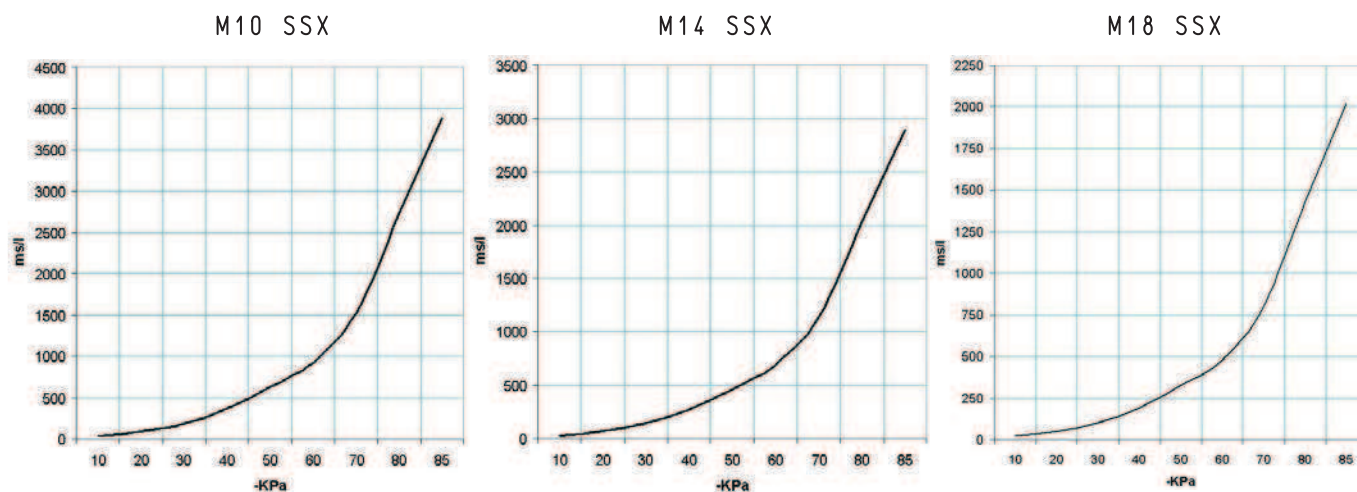
MULTI-STAGE VACUUM GENERATORS M 10 SSX, M 14 SSX and M 18 SSX

Air capacity (NI/s) at different vacuum levels (-Kpa)



Generator art.	Supply press. bar (g)	Air consumption NI/s	Air capacity (NI/s) at different vacuum levels (-KPa)									Max. vacuum level
			0	10	20	30	40	50	60	70	80	-KPa
M 10 SSX	5.0	1.9	2.61	2.00	1.55	0.80	0.64	0.50	0.29	0.19	0.09	85
M 14 SSX	5.0	2.5	3.50	2.33	1.72	1.00	0.89	0.67	0.35	0.24	0.11	85
M 18 SSX	5.0	3.6	5.00	3.50	2.78	2.02	1.02	0.75	0.44	0.30	0.14	85

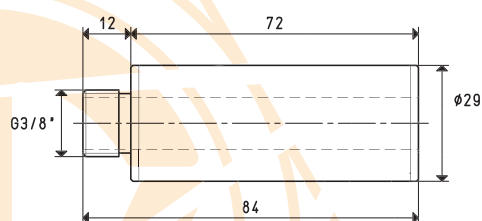
Evacuation time (ms/l=s/m³) at different vacuum levels (-Kpa)



Generator art.	Supply press. bar (g)	Air consumption Nl/s	Evacuation time (ms/l = s/m³) at different vacuum levels (-KPa)									Max. vacuum level
			10	20	30	40	50	60	70	80	85	-KPa
M 10 SSX	5.0	1.9	40	93	188	371	629	918	1534	2731	3878	85
M 14 SSX	5.0	2.5	30	69	140	276	469	685	1144	2036	2892	85
M 18 SSX	5.0	3.6	21	48	98	193	327	478	799	1423	2020	85

Accessories included

Silencer art. SSX 1/2" on M10 and M14



Silencer art. SSX 1/2" on M18

