



Silencers

The risk of disruption as a result of a clogged silencer is eliminated with Silvent silencers.

How to choose the right silencer

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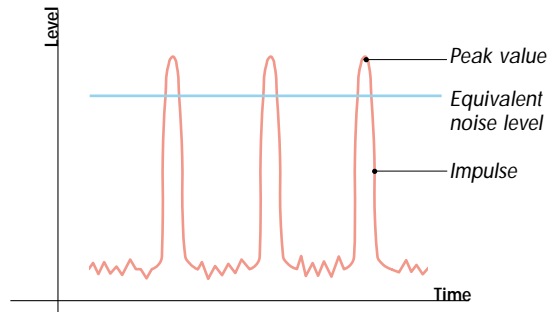
Loud exhaust noise from pneumatic valves

Noise from pneumatic valves is far more dangerous and results in considerably more permanent hearing impairment than most people realize. The human brain is incapable of registering the actual strength of the rapid chain of events the ear is exposed to. The strength and harmfulness of impulse noise, e.g. compressed air noise or hammering noise, is frequently underestimated. A half-inch valve that regulates a pneumatic cylinder making three strokes per minute generates a noise level as high as a continuous noise source of 92 dB(A).

Working on a daily basis in such an acoustic environment is directly injurious.

Fortunately, noise of this type is, for the most part, avoidable. With the right technique, compressed air noise can virtually be eliminated.

Silvent silencers effectively muffle the noise of exhaust air from one or several valves.



Impulse noise is too rapid for the brain to fully register. It generates a high equivalent noise level that corresponds to a continuous noise level which is clearly sufficient to permanently impair hearing.

Three standard types of Silvent silencers

Hose silencers

For installation directly in the valve's exhaust ports. Provides noise reduction of approx. 25 dB(A).

Central silencers

Designed to muffle the noise of exhaust air from a large single valve or as a common silencer for a number of smaller valves. Provides noise reduction of 30-34 dB(A).

Expansion silencers

Used in systems with short cycles requiring low backpressure. Provides noise reduction of 30-35 dB(A).

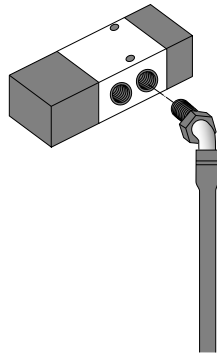


Single or multiple valves

Single valves

When noise is generated by a single valve, good results are normally attained by using an SDR or SDV hose silencer. This type of silencer is suitable for valves with connection diameters of $\varnothing 1/8"$ or $\varnothing 1/4"$. Whether you should choose a straight hose silencer (SDR) or an angled hose silencer (SDV) is primarily a question of available space. The choice also depends on the orientation of the valve's exhaust ports. If you need as little pressure drop as possible across the

silencer, you should choose an SDR. Consult the table on the following page to make sure you have not selected a silencer that is too small.



In most cases it is simply a matter of choosing a silencer with the same thread as the exhaust ports of the valve.

Several valves

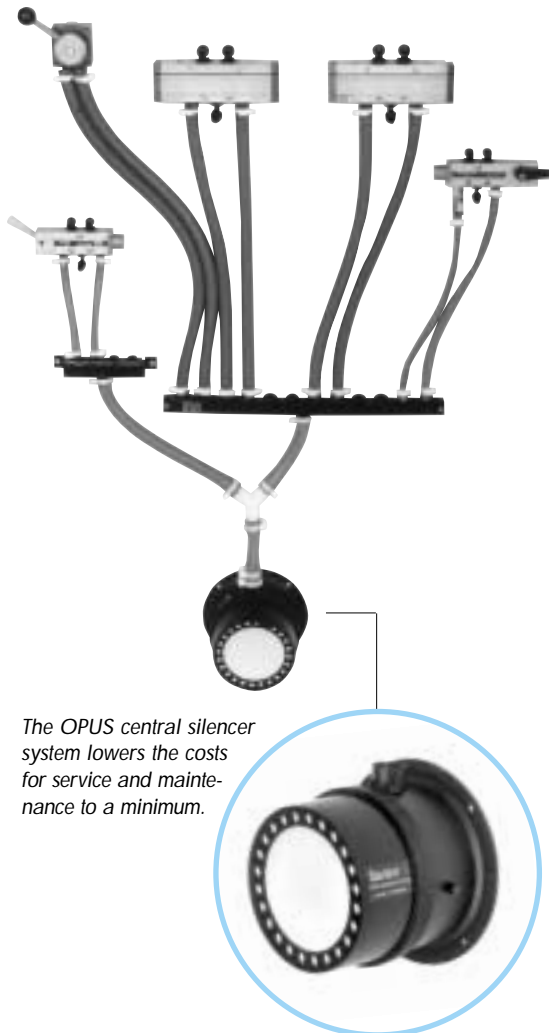
When noise is generated by many valves, the best solution is to connect the exhaust ports to a central silencer (CD). Of course you can also use hose silencers if the size of the valve so permits.

The solution of connecting several valves together provides an installation that is well adapted to its purpose. The central silencer can be positioned so that the degree of noise reduction is maximized. The centralized placement of the silencer also facilitates maintenance since many valves can be serviced from a single point. Compare this with the ordinary, conventional solution where you use two silencers per valve.

The installation of a central silencer saves both time and money when it comes to maintenance.

Many machines have a large number of valves that are controlled by block-mounted valves. It is rare that several of the cylinders operate simultaneously. Therefore you can connect a large number of valves to a single silencer. You can connect up to 10 $1/4"$ valves. If a sensitive valve leads to malfunction, it should be connected to a silencer of its own.

A CD is dimensioned to handle the flow from a $1/2"$ valve operating at short intervals.



The OPUS central silencer system lowers the costs for service and maintenance to a minimum.

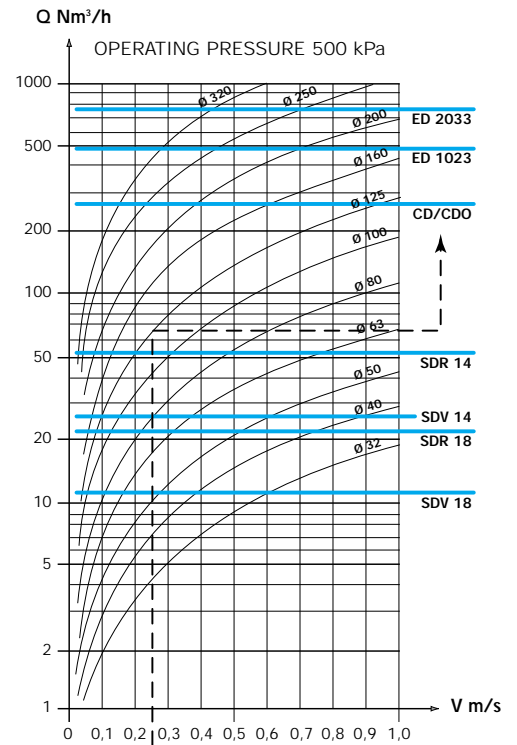
Dimensioning guidelines

The table below provides recommendations on the types of silencers that are appropriate for various types of pneumatic systems.

Cylinder Ø	Valve dim.	Max. piston speed m/s	Silencer	Noise reduction dB(A)
32	1/8	0.60	SDV 18	25
32	1/8	1.00	SDR 18	25
40	1/4	0.74	SDV 14	25
40	1/4	1.00	SDR 14	25
50	1/4	0.60	SDV 14	25
50	1/4	1.00	SDR 14	25
63	3/8	1.00	CD/CDO	34
80	3/8	1.00	CD/CDO	34
100	1/2	1.00	CD/CDO	34
125	1/2	0.93	CD/CDO	34
160	3/4	1.00	ED 1023	31
200	3/4	0.70	ED 1023	31
>200	1	0.50	ED 1023	31
>200	1	0.50	ED 1023	29

The term piston speed refers to the average speed for a single stroke.

$$\text{Piston speed (m/s)} = \frac{\text{Stroke length (m)}}{\text{Time for a single stroke (sec.)}}$$



Example: Cylinder Ø 125 with a piston speed of 0.25 m/s requires a CD or CDO silencer.

Another method for choosing the proper silencer is using the diagram above. By knowing the diameter of the cylinder and the speed of the piston in m/s you can find the intersection point in the diagram. The maximum capacity for the various silencers is indicated by the dotted horizontal lines. Silencers whose lines lie higher than the point of intersection can be used.

How to get rid of oil mist

Most pneumatic systems contain apparatus for mist lubrication, which mixes oil droplets into the compressed air to lubricate moving parts in valves and cylinders. When the entrained oil has served its purpose, it passes through the valve's exhaust ports into the workplace.

Due to the fact that the velocity of the air passing through the exhaust port is exceptionally high, the oil is dispersed as extremely fine, suspended particles, creating oil mist. In highly automated installations with many lubricated pneumatic valves, the amount of oil mist generated by the pneumatic system may well be high enough to cause discomfort. This may be the case even though oil mist levels are substantially below those permitted by national health authorities.

To come to grips with the problem of oil mist in the workplace, a central silencer with an oil trap (CDO) should be installed.

The CDO utilizes two separation principles: first, a mechanical oil trap that takes care of most of the oil; second, a filter that causes the remainder of the oil to form globules.

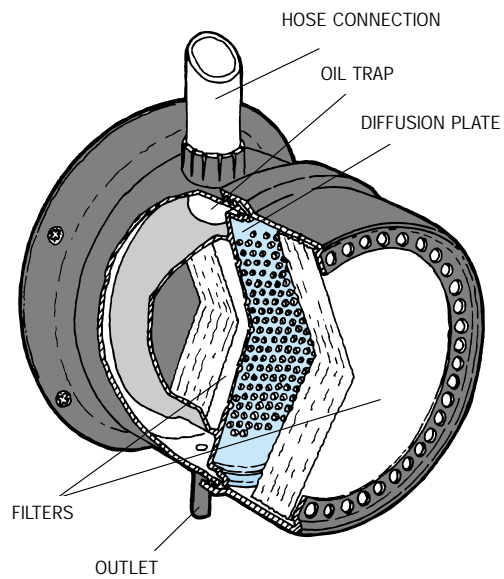
The degree of separation achieved by a Silvent central silencer has been measured at 99%.

This degree of separation is entirely adequate – no extreme separation to no practical use.

When determining the number of CDOs needed for a given installation, you can use the same guidelines as for the CD.

The table on page 4.4 applies to the CDO as well.

The CDO should be complemented with a collection vessel for the oil.



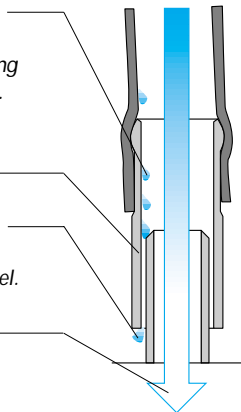
Mechanical oil trap

As the mixture of air and oil mist passes the valve's exhaust port, it expands and cools rapidly, condensing the oil on the inner wall of the hose.

Connection pipe

Globules of oil and some spill air pass along the wall of the oil trap and are collected in a separate vessel.

Most of the airflow goes on to the silencer.



CDO with collection vessel UK

Large flows and short cycles

If you have large cylinders

When silencing valves that create especially strong impulse flows (large volumes for a short time), it is important that there is volume between the valve and the silencer to even out the pulse. Normally, hoses and coupling manifolds provide the desired volume.

However, for special cases with exceptionally large flows, the expansion silencer has been developed.

Expansion silencers are available for connections with diameters of up to Ø 2".

Use the table on page 4.4 to decide which silencer you should install.

Expansion silencers are particularly suitable for systems with the following characteristics:

- Large flows
- Short cycles
- Sensitivity to backpressure

If you have quick evacuation valves

To attain faster cylinder function, quick evacuation valves are sometimes used. As a rule, these valves generate larger flows than ordinary valves of the same connection dimension. Therefore, when connecting valves to a silencer, it is advisable to watch for reduced cylinder

speed or overloading of the silencer.

It may be necessary to increase the number of silencers and mount them in parallel.



If you have punch presses

Many punch presses are equipped with so called pneumatic engagement. After a punch stroke has been initiated, the engagement mechanism is evacuated in order to stop the punch. If evacuation is impeded, there is a risk of double punching. For this reason, modern silencers must be fitted with a relief valve that opens if backpres-

sure should become too great.

To achieve satisfactory noise suppression, exhaust should be connected to an expansion tank whose volume is 5 to 10 times that of the engagement mechanism. Air from the expansion tank is then discharged to one or several central silencers, depending on the size of the press.

For special requirements

If you have air motors or hand tools

Exhaust air from air motors in, for example, hand-held tools such as grinding machines and nut setters often poses a noise problem. Since the power of an air motor is a function of the pressure differential across the motor, backpressure on the discharge side is necessarily negative. Therefore, silencing used in such applications must allow relatively free air passage.

Our range of silencers has been developed primarily for stationary installations of cylinders and valves.

Tests have shown that hose silencers can often be used with highly satisfactory results. On the whole, however, the results of the tests have varied so greatly that it is difficult to provide general dimensioning guidelines.

You should begin with a simple test installation and base further dimensioning upon the results of the trial. The maximum amount of continuous flow the different silencers are capable of handling is shown in the diagram on page 4.4.



If you have a vacuum system with air ejectors

Pneumatic ejectors are even more sensitive to backpressure than air motors. Extreme care must be taken in such installations. Our central silencer CD may however be used in most cases.

The maximum amount of continuous flow the different silencers are capable of handling is shown in the diagram on page 4.4.



We gladly provide tips and recommendations on the silencers that are most suitable for your purposes. We can also help by tailoring silencers for special applications where a stock model might not be sufficiently effective.

We can assist you in figuring out which additional parts you will need. Our product range includes manifolds and various couplings and connection parts for problem-free installation.

Silvent can help with this

You avoid further risk of experiencing production stoppage due to clogged silencers. The problem of noise from pneumatic valves is solved

once and for all. If you choose a silencer with an oil trap, you can get rid of oil mist in the workplace at the same time.

The advantage of taking measures now

HOSE SILENCER

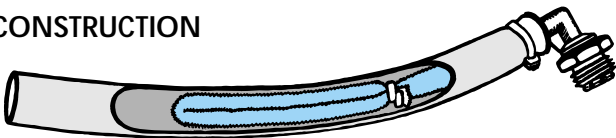


OPUS hose silencers are designed to be mounted directly in the exhaust ports of the valve. They are available in two sizes, 1/8" and 1/4", both with either straight or angled connections.

The patented OPUS hose silencer provides noise reduction of 20-25 dB(A).

These hose silencers afford considerable advantages in comparison with competing products constructed of sintered metal or plastic. Besides providing more effective noise suppression, hose silencers can not clog. A clogged silencer in a compressed air system often results in an interruption of service, the cause of which can be extremely difficult to locate. Moreover, with sinter silencers, there is clearly a risk of explosion. The design of OPUS hose silencers eliminates both the risk of accident and disruption of service.

CONSTRUCTION

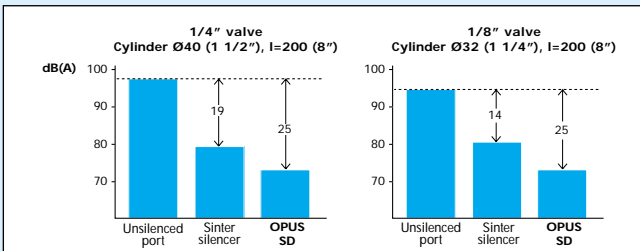


The flexible absorber in the OPUS hose silencer stretches with each blast of air, thereby allowing dirt and ice to pass unhindered. The OPUS hose silencer cannot possibly clog.



The picture above shows a pneumatic press where hose silencers have effectively eliminated impulse noise.

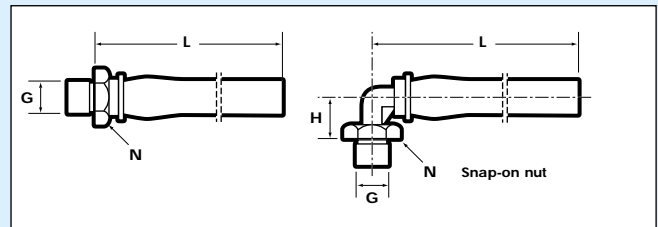
NOISE REDUCTION



SPECIFICATIONS

Silencer		SDV 18	SDR 18	SDV 14	SDR 14
Max. op. pressure	kPa	200	200	200	200
	psi	30	30	30	30
Max. op. temp.	°C	70°	70°	70°	70°
	°F	160°	160°	160°	160°
Flow	Nm ³ /h	10.9	20.4	26.1	50.9
	scfm	6.42	12.02	15.37	29.98
Weight	g	16	15	34	33
	lbs	0.035	0.033	0.075	0.073
Material		PVC;PP	PVC;PP	PVC;PP	PVC;PP

ORDERING INFORMATION



Thread	L		H		N		Order no.	
	mm	"	mm	"	mm	"		
Straight	1/8"	260	10.23			13	0.51	SDR 18
	1/4"	330	12.99			17	0.67	SDR 14
Angled	1/8"	260	10.23	14	0.55	13	0.51	SDV 18
	1/4"	330	12.99	17	0.67	17	0.67	SDV 14

CENTRAL SILENCER



When a CD was installed at Scania in Södertälje, the machine was suddenly so quiet that the company's personnel thought there was something wrong with the machine. Safety inspector Anders Rundgren confirmed that the noise peaks were reduced from 105 dB(A) to 84 dB(A) by the installation.



CD

The OPUS central silencer is designed to silence exhaust air from a single large valve or as a common silencer for a number of smaller valves.

This silencer has been dimensioned to manage the flow from 1/2" valves operating at short intervals. In machines containing a larger number of valves, the timing of the cycles is often irregular. In such systems, several valves can be connected to a central silencer.

The patented OPUS central silencer provides a noise reduction of 30-35 dB(A).

The OPUS central silencer has a radically different construction than competing silencers. The larger silencers on the market are often designed to lead air to the middle, to a central tube shaped filter – a so called coalescence filter.

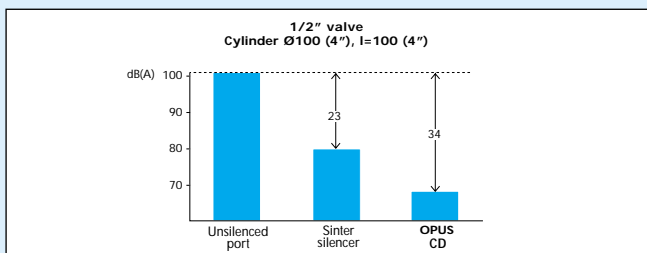
The disadvantage of this construction is that, sooner or later, the filter clogs, resulting in interruption of service. The most common-

ly occurring problems in pneumatic systems are, however, caused by diffusion silencers, or so called sinter silencers. Every day, clogged sinter silencers lead to thousands of unnecessary and expensive disruptions and breakdowns in industries throughout the world. Furthermore, clogged sinter silencers involve an indisputable risk of explosion.

The design of the OPUS silencer eliminates the risk of disruption due to clogging (see page 4.11) as well as providing oil separation that cleans exhaust air.

Our central silencers are available in two models: CD and CDO. The essential difference between the two models is the degree of oil separation. The CD silencer separates oil in the filter only, providing more than adequate separation for most industrial environments. The CDO silencer is designed with a built-in oil trap as well, for intensive oil separation. See the following page.

NOISE SUPPRESSION



SPECIFICATIONS

Silencer		CD
Max. op. pressure	kPa	200
	psi	30
Max. op. temp.	°C	70°
	°F	160°
Flow	Nm ³ /h	261
	scfm	154
Weight	g	310
	lbs	0.68
Materials	Polypropylene plastic, Fiberglass, Nitrile rubber	

ORDERING INFORMATION

Description	Remarks	Order no.
Central silencer	Complete with filter, connection pipe, hose clamp and 0.5 m (19.7") connection hose Ø 20/16 (SL16)	CD

CENTRAL SILENCER WITH OIL SEPARATION



CDO

The OPUS central silencer CDO has the same capacity as the CD for noise suppression, in addition to intensive oil separation. This silencer is equipped with a built-in oil trap, where oil is separated from exhaust air and drained. The OPUS central silencer CDO reduces the amount of oil mist in exhaust air by approx. 99%.

Most pneumatic systems contain apparatus for mist lubrication, which mixes oil mist into the compressed air. When the entrained oil has served its purpose, it passes through the valve's exhaust ports into the workplace.

Aside from the practical disadvantages that grease and dirty oil involve, there are medical considerations: health hazards associated with both inhalation of and direct skin contact with oil.



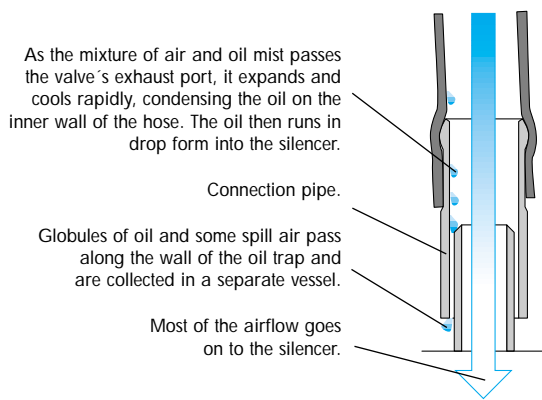
Hasselblad, the Swedish camera makers, have installed a number of OPUS silencers in their production to eliminate oil mist and impulse noise. This picture shows a CNC machine fitted with a CDO for oil separation.

Diffusion silencers of the sinter type actually exacerbate the problem of oil mist in the working environment. Oil droplets passing through the sintered material are diffused, thereby increasing the amount of oil mist in the air.

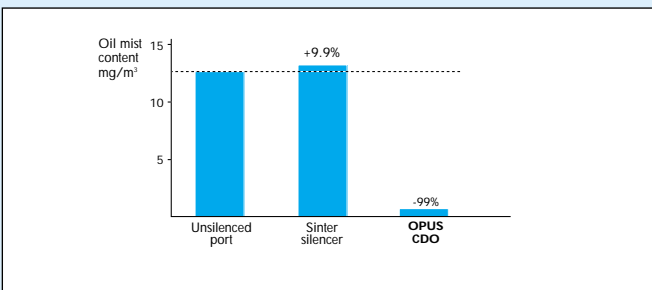
The OPUS CDO reduces the amount of oil mist in exhaust air to well under existing limits; levels are so low that they are barely perceptible using ordinary measuring equipment.

OIL MIST FALLS INTO THE TRAP

There are two barriers for oil in the OPUS trap: first a mechanical oil trap that takes care of the greater portion of the oil, then a filter that causes the remainder of the oil mist to form globules.



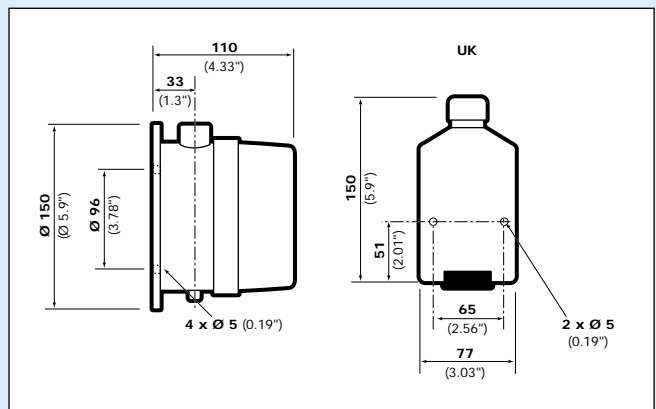
OIL SEPARATION



SPECIFICATIONS

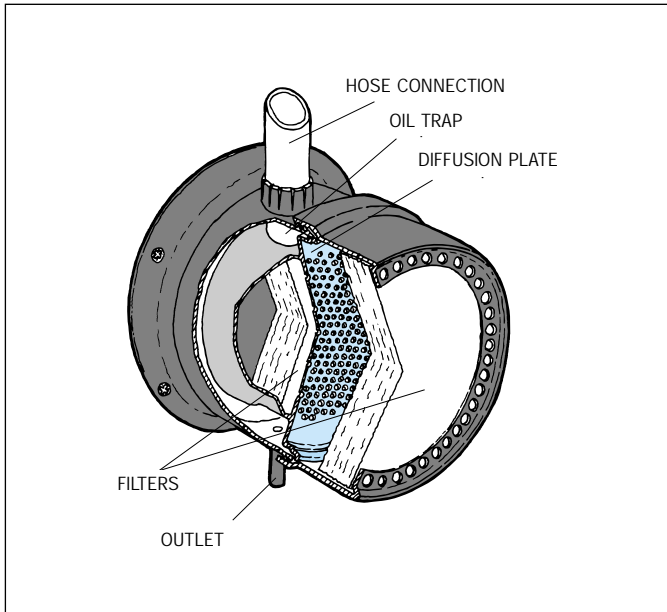
Silencer		CDO
Max. op. pressure	kPa	200
	psi	30
Operating temp.	°C	70°
	°F	160°
Flow	Nm³/h	261
	scfm	154
Weight	g	325
	lbs	0.72
Materials	Polypropylene plastic, Fiberglass, Nitrile rubber	

ORDERING INFORMATION



Description	Remarks	Order no.
Central silencer	Complete with filter, connection pipe, hose clamp and 0.5 m (19.7") connection hose Ø 20/16 (SL16)	CDO
Oil vessel	Complete with mounting bracket	UK

BUILT-IN PROTECTION AGAINST CLOGGING



The cutaway diagram on the left shows how the OPUS central silencer is constructed.

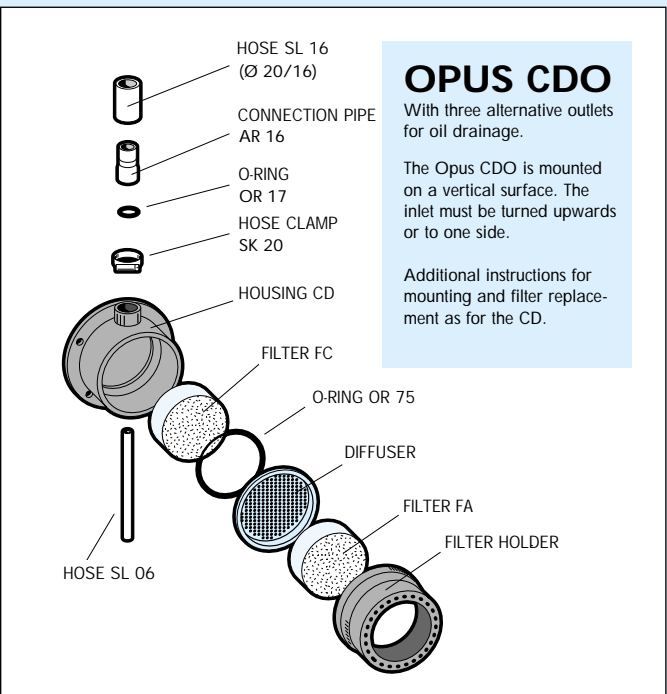
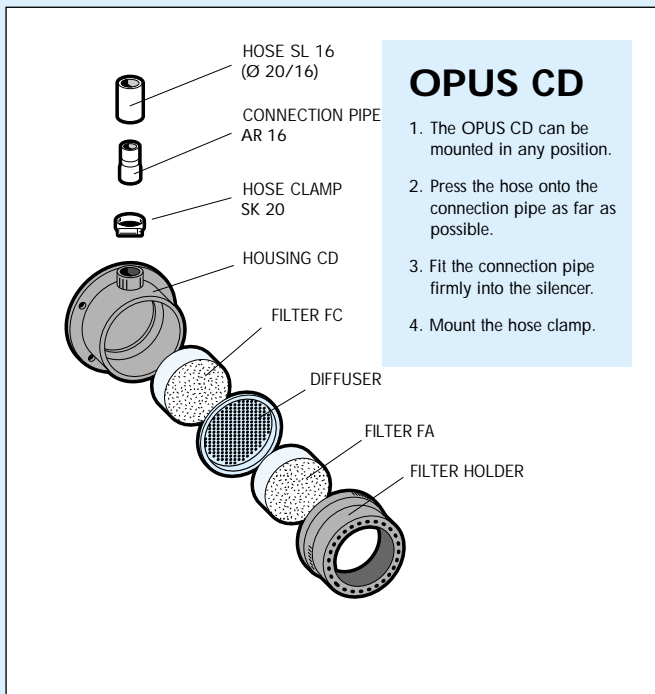
Noise is muffled as the compressed air passes through the sound absorbing filters. The large surface area makes clogging highly unlikely. Should routine filter change be overlooked and the outer filter become blocked after an extended period of use, it is forced out of the filter holder when back pressure becomes too great, allowing the air to pass.

There is no interruption of service.

It is recommended that filters be changed on a regular basis in connection with routine maintenance of the pneumatic system. Filter replacement is both easy and inexpensive.

Every silencer in the OPUS range provides built-in protection against clogging.

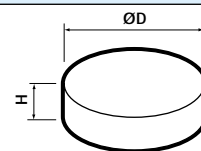
EASY INSTALLATION AND FILTER REPLACEMENT



FILTER REPLACEMENT

Unscrew the filter holder and replace filter FA. The filter should be placed with the smooth side out. If filter FC needs replacement, the connection pipe must be disassembled and the diffuser removed. Please note! The guide on the diffuser should fit in the groove in the housing. OPUS ED 1023 and ED 2033, the largest silencers in the OPUS range, are fitted with the same size filters as the CD. Filter replacement as for the CD.

FILTER REPLACEMENT



Description	Diameter (D)	Height (H)	Order no.
Filter FA	Ø 109 (4.29")	20 (0.79")	FA
Filter FC	Ø 73 (2.87")	35 (1.38")	FC

EXPANSION SILENCER 1023



The OPUS expansion silencer ED 1023 is designed for noise suppression and oil separation in systems with large air flows.

The ED 1023 is dimensioned to handle the flow from cylinders with large stroke volumes. This silencer is capable of managing exhaust air from several 1" valves operating at short intervals.

Typical areas of application are machines with short cycles and requirements for low backpressure. Such applications require large expansion volumes to attain sufficiently quick pressure drop in the system. The ED 1023 is also suitable for use as a common silencer for entire groups of machines.

The ED 1023 provides noise reduction of 30-35 dB(A).

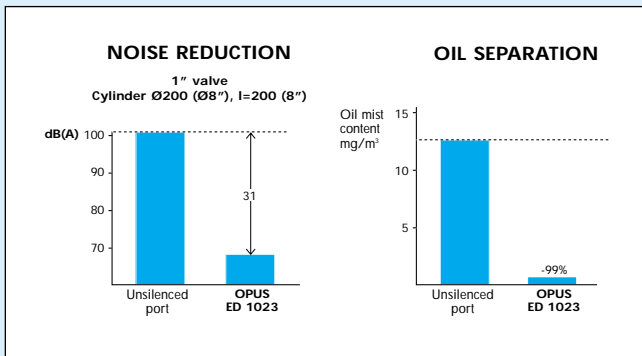


Here, an OPUS ED 1023 is connected to a folding machine with 2 x 7 rubber bellows.

The silencer has three 1" inlets and two drainage outlets for oil separation. Oil separation is approximately 99%.

As is the case with all OPUS silencers, the ED 1023 affords built-in protection against clogging.

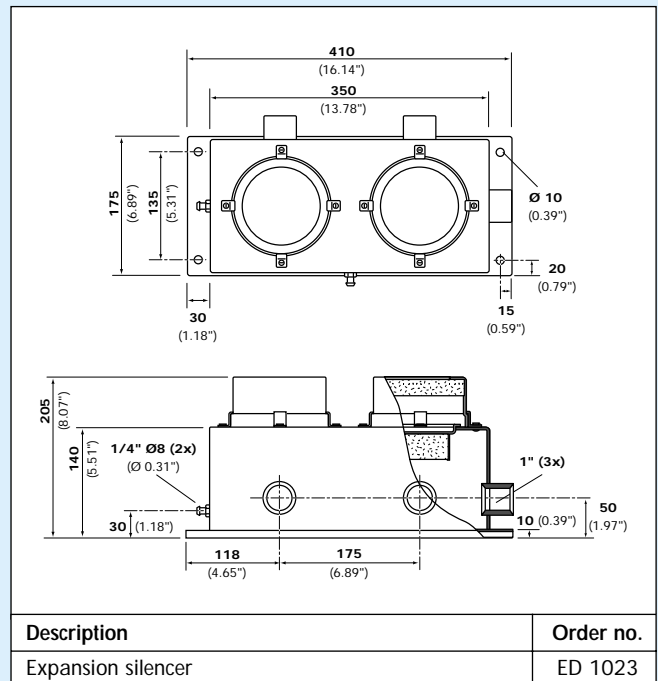
NOISE REDUCTION/OIL SEPARATION



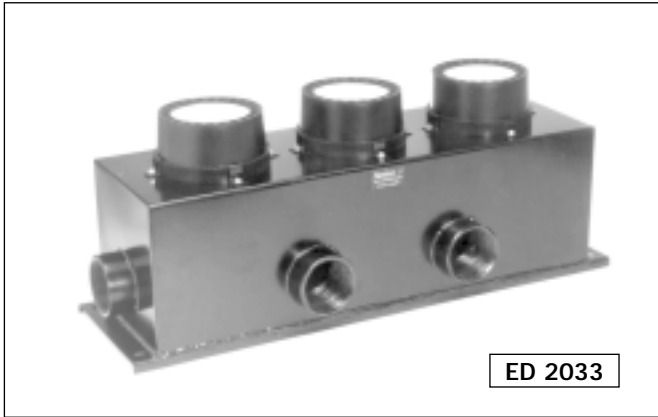
SPECIFICATIONS

Silencer		ED 1023
Max. op. pressure	kPa	200
	psi	30
Max. op. temp	°C	70°
	°F	160°
Flow	Nm³/h	490
	scfm	288
Weight	g	3630
	lbs	8
Material	Steel, Polypropylene, Fiberglass, Nitrile rubber	

ORDERING INFORMATION



EXPANSION SILENCER 2033



ED 2033

The OPUS expansion silencer 2033 is designed for noise suppression and oil separation in systems with extremely large flows. The ED 2033 is dimensioned to handle the flow from cylinders with large stroke volumes. This silencer can manage exhaust air from several 2" valves operating at short intervals.

Typical areas of application are machines with short cycles and requirements for low backpressure. Such applications require large expansion volumes to attain sufficiently quick pressure drop in the system. The ED 2033 is also suitable for use as a common silencer for entire groups of machines.

The ED 2033 provides noise reduction of 30-35 dB(A).

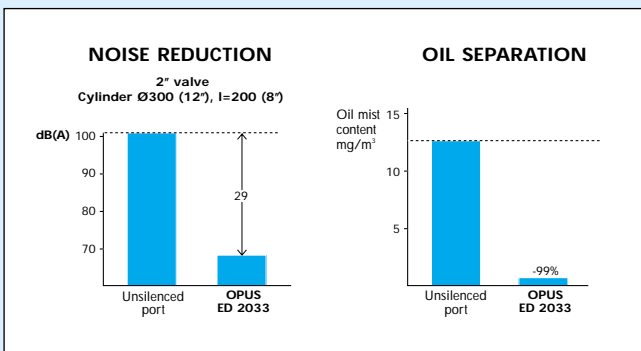


Using two ED 2033s SKF has solved a noise problem in a powder press. Connecting the silencers in series provided the expansion volume required to avoid backpressure in the system.

The silencer has three 2" inlets and two drainage outlets for oil separation. Oil separation is approximately 99%.

As is the case with all OPUS silencers, the ED 2033 affords built-in protection against clogging.

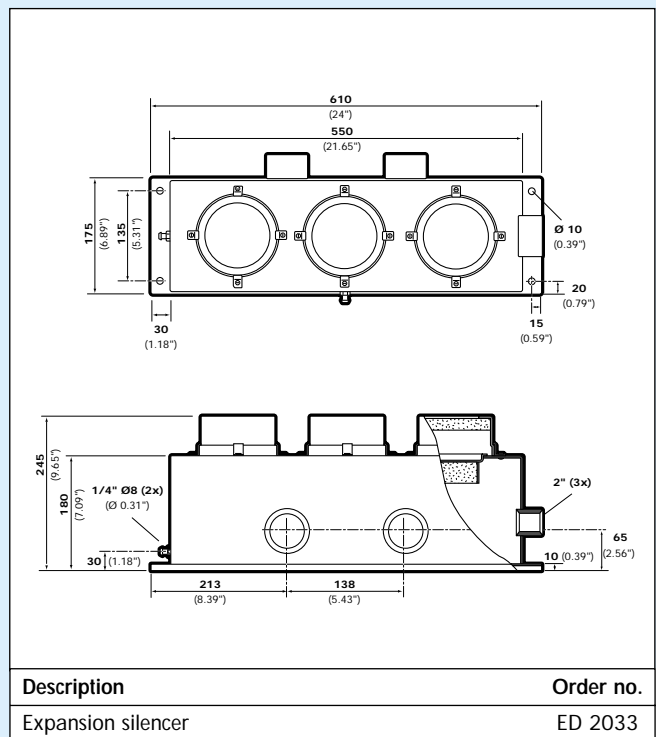
NOISE REDUCTION/OIL SEPARATION



SPECIFICATIONS

Silencer	ED 2033	
Max. op. pressure	kPa	200
	psi	30
Max. op. temp	°C	70°
	°F	160°
Flow	Nm³/h	740
	scfm	436
Weight	g	6750
	lbs	15
Material	Steel, Polypropylene, Fiberglass, Nitrile rubber	

ORDERING INFORMATION



COUPLING ASSEMBLIES FOR CENTRAL SILENCERS

The OPUS range includes a large number of fittings with which exhaust air from a number of valve ports can be brought to a common noise suppressor - a central silencer.

STRAIGHT COUPLING

Available in many connection sizes.

Y-PIECE

The simplest method for joining exhaust ports is by means of a Y-piece. The OPUS range includes a wide selection of sizes.

DUMMY PLUG

For closing off connections that are not used.

REDUCER

Reducers increase combination possibilities.

OPUS CENTRAL SILENCER

Normally, 6-10 1/4" valves can be connected to a single central silencer without risk of disruption. In applications involving large amounts of air and requiring low backpressure, each valve should be connected to its own central silencer. For extremely large air flows, an OPUS expansion silencer is recommended.

ANGLE COUPLING

with swivel connection. For maximum speed of assembly, the threaded part is a separate unit which is first screwed into the port before the angled section is snapped into place.

HOSE CLAMP

HOSE CLIP

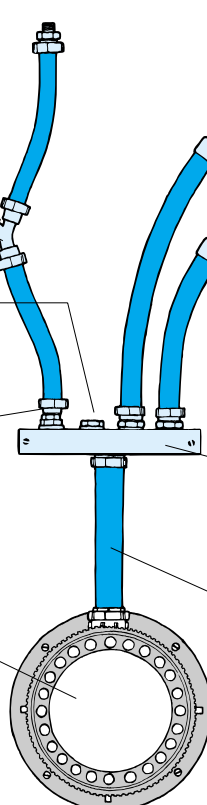
The range also includes an assortment of hose clamps and hose clips.

COUPLING MANIFOLD

The OPUS range contains a large number of standard types.

HOSE

The range includes hoses with a larger internal dimension than the hose on the delivery side: both a simple PVC hose of oil resistant quality and a reinforced hose that is extra flexible and adaptable.



ASSEMBLY EXAMPLES WITH Y-PIECE

Central silencer connected to one valve.

	Valve diam.	1/4"	3/8"	1/2"	3/4"
	Coupling	RN 1412	RN 3812	RN 1216	RN 3416
	Hose clamp	SK 10	SK 10	SK 16	SK 16
	Hose	SL 12	SL 12	SL 16	SL 16
	Hose clip	KK 12	KK 12	KK 16	KK 16
	Hose clamp	SK 10	SK 10	SK 18	SK 18
	Y-piece	Y 12	Y 12	Y 16*	Y 16*
	Hose L=30	SL 12	SL 12	-	-
	Hose clamp	SK 16	SK 16	SK 18	SK 18
	Hose	SL 16	SL 16	SL 16	SL 16
	Hose clip	KK 16	KK 16	KK 16	KK 16
	OPUS central silencer CD or CDO				
	* Connecting hose to Y-piece Y16 is easier if the hose is warmed.				

ASSEMBLY EXAMPLES WITH COUPLING MANIFOLD

Central silencer connected to several valves.

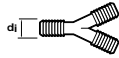
	Valve diam.	1/8"	1/4"	3/8"	1/2"	3/4"
	Coupling	RN 1810	RN 1412	RN 3812	RN 1216	RN 3416
	Hose clamp	SK 04	SK 10	SK 10	SK 16	SK 16
	Hose	SL 10	SL 12	SL 12	SL 16	SL 16
	Hose clip	KK 10	KK 12	KK 12	KK 16	KK 16
	Hose clamp	SK 04	SK 10	SK 10	SK 16	SK 16
	Dummy plug	P 18	P 14	P 14	P 16	P 16
	Coupling	RN 1810	RN 1412	RN 1412	-	-
	Coupl. manifold	KR 18X1	KR 14X1	KR 14X1	KR 16X1	KR 16X1
	Hose clamp	SK 16	SK 16	SK 16	SK 16	SK 16
	Hose	KK 16	KK 16	KK 16	KK 16	KK 16
	Hose clip	SL 16	SL 16	SL 16	SL 16	SL 16
	OPUS central silencer CD or CDO					
	Collection vessel UK (CDO only)					

COUPLING COMPONENTS

NB! OPUS hoses and fittings are designed for exhaust air of 200 kPa (30 psi) maximum pressure unless otherwise stipulated.

Y-PIECE

For hose

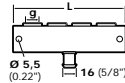


d _i mm	d _i "	Order no.
6	1/4	Y06
10	3/8	Y10
12	1/2	Y12
16	5/8	Y16

Tip: When connecting SL 16 hose to Y-piece Y 12, first press an approx. 30 mm (1.18") long piece of SL 12 hose onto the Y-piece.

COUPLING MANIFOLD

1/8" and 1/4" threaded connection

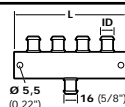


No. of inlets x thread	L mm	L"	Order no.
4x1/8"	125	4.92	KR1841
8x1/8"	225	8.85	KR1881
4x1/4"	140	5.51	KR1441
6x1/4"	200	7.87	KR1461
8x1/4"	260	10.23	KR1481*

*New design, without attachment holes.

COUPLING MANIFOLD

For hose



No. of inlets	ID mm	"	L mm	L"	Order no.
4	10	3/8	125	4.92	KR1041
8	10	3/8	225	8.85	KR1081
4	12	1/2	140	5.51	KR1241
6	12	1/2	200	7.87	KR1261
8	12	1/2	260	10.23	KR1281
4	16	5/8	155	6.10	KR1641
4+1	16	5/8	155	6.10	KR1642

DUMMY PLUG

Plastic, for coupling manifolds with thread.



Dim G	Order no.
1/8"	P18
1/4"	P14

DUMMY PLUG

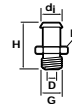
Plastic, for coupling manifolds for hose.



Dim d mm	Dim d "	Order no.
16	5/8	P16

COUPLING

Straight



Hose d _i mm	Thread G	H mm	N mm	Material	Order no.
10 (3/8")	1/8"	13	6	PP	RN1810
12 (1/2")	1/4"	17	8	PP	RN1412
12 (1/2")	3/8"	22	10	Steel	RN3812
16 (5/8")	1/2"	25	14	Steel	RN1216
16 (5/8")	3/4"	32	14	Steel	RN3416

COUPLING

angled with snap-on nut



Hose d _i mm	Thread G	H mm	N mm	Material	Order no.
10 (3/8")	1/8"	14	13	PP	VN1810
12 (1/2")	1/4"	17	17	PP	VN1412

REDUCER

Max. pressure 10 bar (143 psi)



Thread G	Thread g	N mm	Order no.
1/4"	1/8"	14	RM1418
3/8"	1/4"	17	RM3814
1/2"	3/8"	22	RM1238
3/4"	1/2"	27	RM3412
1"	3/4"	32	RM1034

ANGLE

Max. pressure 10 bar (143 psi)



Thread	Order no.
3/8"	RV38
1/2"	RV12

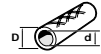
PVC-HOSE



d/D mm	Description	Order no.
6/8	Hose 6 mm (1/4")	SL06
10/12	Hose 10 mm (3/8")	SL10
12/15	Hose 12 mm (1/2")	SL12
16/20	Hose 16 mm (5/8")	SL16

CX-HOSE

Extra flexible and shape retentive polyester reinforced PVC hose. Max. pressure 1 MPa (143 psi)



d/D mm	Description	Order no.
10/14	CX-hose 3/8"	CX10
12/17	CX-hose 1/2"	CX12

HOSE CLIP

Plastic



For hose	D mm	Order no.
SL10	12	KK10
SL12	15	KK12
SL16	20	KK16

HOSE CLAMP

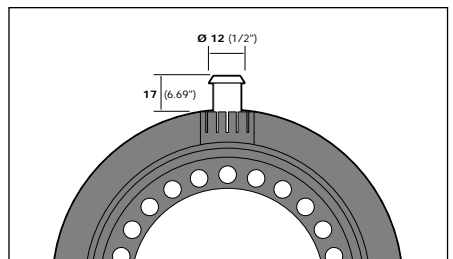
Plastic



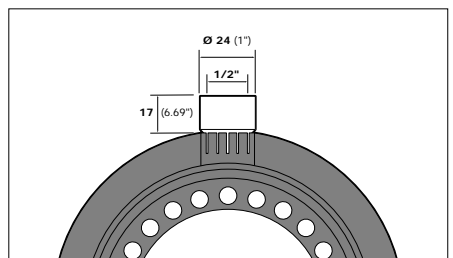
Min. dia.	Max. dia.	For hose	Order no.
8.7	10.0	SL06	SK02
10.8	12.3	SL10	SK04
12.0	13.7	CX10	SK06
15.0	16.8	SL12, CX12	SK10
19.9	21.7	SL16	SK16
21.4	23.0	SL16*	SK18
22.7	24.7	-	SK20

*SK18 for connection to Y-piece Y-16

ALTERNATIVE CONNECTION PIPES



Connection pipe AR 12 for hose with in. diam. 12 mm (1/2"). Steel. Order no. AR12.



Connection pipe ARG12 with 1/2" female thread. Steel. Order no. ARG12