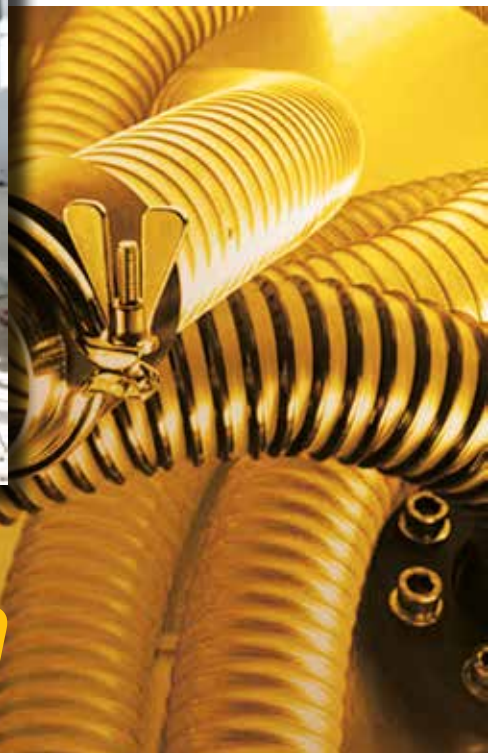




2015



Vehicle
exhaust
removal



SovPlym

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SovPlym

SOVPLYM

SovPlym is leading manufacturer and supplier of equipment for air filtration, industrial ventilation and exhaust gas removal. Based on best global technologies we have developed our own products lines of equipment.

We offer top quality solutions for air pollution control inside production facilities, bringing care of employees' health and improved work efficiency combined with environmental intelligence.

SovPlym is an international company with headquarters in Saint-Petersburg, Russia. SovPlym was founded in 1989. International activities have started after successful sales in Russia where SovPlym has around 60% market share in its core segments. During these years, we have helped more than 30 000 customers to organize safe and clean working space.

SERVICES

We offer a full range of services for the design, construction, equipment supply, installation, engineering setup, warranty and after sale service. We also offer turnkey solutions.

*With more than 25 years in the business, we understand our customer needs:
Reliable quality products,
quick decisions, on time delivery and local support.
And that's just what we offer.*

THE REASONS TO WORK WITH US:

- Increasing demands for lower energy costs,
- Demand for increased productivity,
- Demand for better safety,
- Increasing demand for better health,
- Environmentally Sustainable Development.

OUR BEST ARGUMENT

Happy Healthy Customers!

Vehicle Exhaust Removal

Our products are developed to capture 100% of the toxic exhaust fumes at source...

And remove it from your workshop!

Vehicle exhaust fumes are a major hazard in vehicle repair workshops, car inspection stations and alike. SovPlym's product and systems are developed to eliminate this hazard, by capture the exhausts direct at source and remove them, from any car or heavy-duty vehicle.

Our products are installed at automotive workshops, car service facilities, truck repairs, construction machinery, agriculture machinery, vehicle inspection stations, emergency service stations, military installations, etc.

WE PROVIDE A HEALTHIER, BETTER AND MORE EFFICIENT WORKING ENVIRONMENT.

One of our most popular solutions for exhaust extraction equipment is hose reels. Our reels offer a modern and compact design, a convenient and safe operation as well as a quick and easy installation that saves cost. **TIDY AND SAFE WORKSHOP AT A REASONABLE PRICE.**



PRODUCTS AND SYSTEMS YOU NEED TO BUILD YOUR VEHICLE EXHAUST REMOVAL SYSTEM

Flexible **HEAT-RESISTANT EXHAUST HOSES** and **EXHAUST NOZZLES** designed for a quick and easy grip and an efficient removal of all exhausts. They are available in a wide range of sizes and models, offering different resistance and durability.



Medium and high-pressure industrial **EXHAUST FANS** designed to move the air-gas mixture in the ventilation system. Our exhaust fans are available in various versions and sizes, to solve different needs of capacity, performance and energy consumption.

Alternative **EXHAUST UNITS** for stationary workplaces. Our units offers various service ranges, technical specifications and options of serving one or several cars per unit.

RAIL SYSTEMS capturing exhaust gases from moving vehicles. Complete systems handling mobile sources of pollution that offers a wide range of energy efficient and economical solutions. Suitable for service stations, car factories and garages with long transport sections.



ENERGY-SAVING EQUIPMENT is necessary to ensure an optimal cost efficient use of the ventilation system. It dramatically reduces electricity and heat cost and on the same time offers an easy operation and handling of your ventilation equipment.





ARS SPRING EXHAUST REELS

Function

Our spring hose reel ARS is the easiest and most efficient solution for garages and stationary working places. The hose follows the car up and down on the lift or during the different stages of work.

The hose reel either operates as a unit with a preselected fan or is connected directly to a centralized ventilation system.

Design and product advantages

When the reel is inactive, the hose is rolled up on the drum, allowing a totally free work space. When the vehicle mechanic wants to use the exhaust hose, he just pulls it down and easily attaches the nozzle to the vehicle. The hose automatically locks into place. When finished, he removes the nozzle, makes a pull and the hose smoothly returns to the reel, allowing an easy clean-up of the work place.

Note

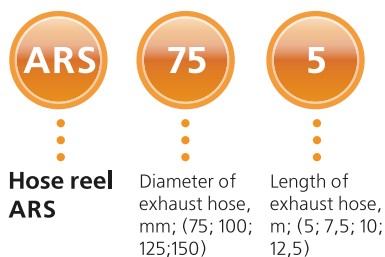
Hose and nozzle types have to be chosen separately, to increase the extraction efficiency.

Installation

The hose reel can easily be mounted to the wall, the ceiling or on a swing arm sSA allowing an increased service area.

Product description and naming

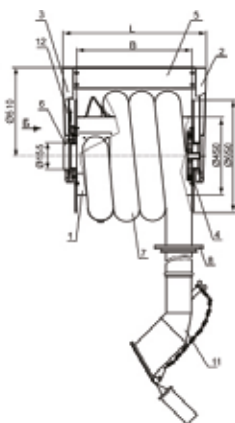
Model ARS-150-12,5 hose reel, without fan, will fit the flange of a Ø (diameter) 160 mm duct. The reel allows to use exhaust hose up to 12,5 m length.



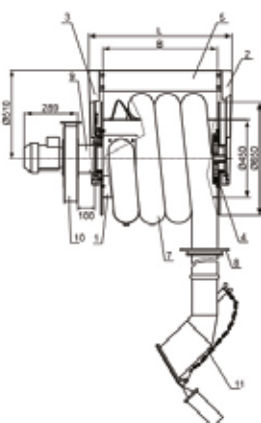
ARS SPRING EXHAUST REELS

Main components, overall and installation dimensions

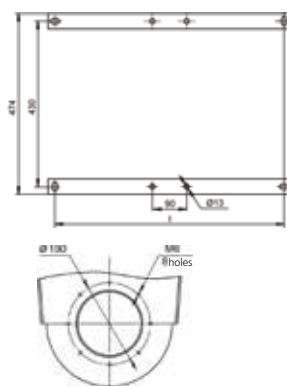
ARS



ARS with fan VMFA



Support views



- | | | | | | |
|---|--|---|------------------------|----|-----------------------|
| 1 | Drum | 4 | Spring drive | 9 | Connecting pipe |
| 2 | Drive support with plastic cover plate | 5 | Beam | 10 | Fan |
| 3 | Duct support with plastic cover plate | 6 | Flange, diameter 160mm | 11 | Exhaust nozzle |
| | | 7 | Exhaust hose | 12 | Drum's spring stopper |
| | | 8 | Hose's rubber stopper | | |



Technical characteristics*

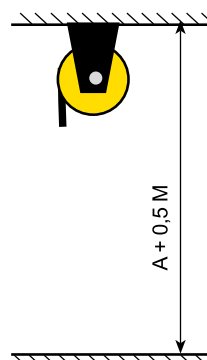
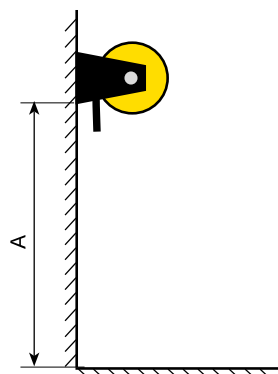
Art. №	Model	Exhaust hose		L, (mm)	l, (mm)	B, (mm)	Weight (w/o hose) kg	Recommended airflow (m³/h)
		Diameter, (mm)	Length, (m)					
5650	ARS-75-5	75	5.0				60,8	270
5650	ARS-75-7.5	75	7.5				60,8	270
5651	ARS -75-10	75	10,0				62,4	270
5651	ARS -75-12,5	75	12,5				62,4	270
5652	ARS -100-5	100	5,0				60,8	540
5652	ARS -100-7.5	100	7.5				60,8	540
5653	ARS -100-10	100	10,0	914	752	750	60,8	540
5654	ARS -100-12,5	100	12.5	1064	902	900	67,2	540
5655	ARS -125-5	125	5,0	764	602	600	60.8	810
5656	ARS -125-7,5	125	7.5	914	752	750	60,8	810
5657	ARS -125-10	125	10,0	1064	902	900	67,2	810
5658	ARS -125-12,5	125	12,5	1264	1102	1100	70.4	810
5659	ARS -150-5	150	5,0				60.8	1080
5659	ARS -150-7,5	150	7.5				60,8	1080
5660	ARS -150-10	150	10,0	1064	902	900	67,2	1080
5661	ARS -150-12,5	150	12,5	1264	1102	1100	70,4	1080

* The measurements were done with rolled down exhaust hose



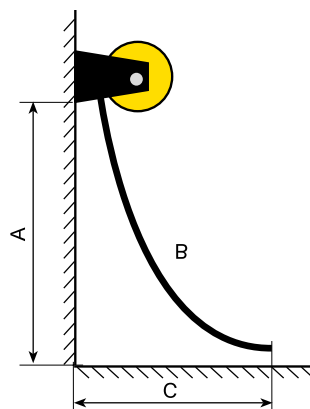
ARS SPRING EXHAUST REELS

Installation options



A max, mm	Hose length, m
3,0	5,0
5,5	7,5
8,0	10,0

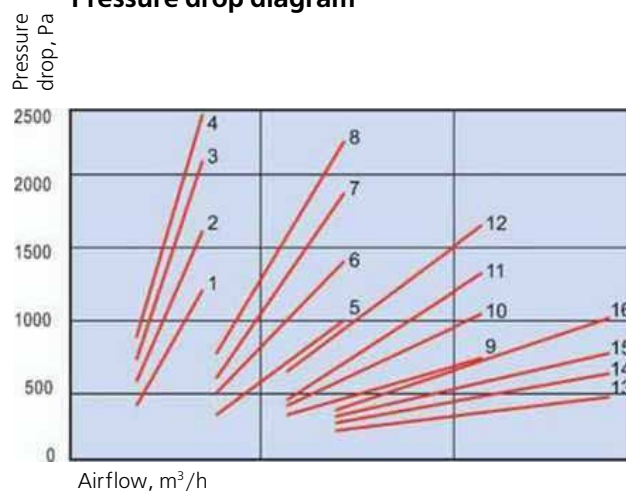
Service area



A - Mounting height
B - Hose height
C - Max range

A, m	B, m	C, m	B, m	C, m	B, m	C, m
2,5	5,0	3,8				
3,0	5,0	3,5	7,5	6,2		
3,5	5,0	3,2	7,5	5,9	10,0	8,5
4,0	5,0	2,7	7,5	5,5	10,0	8,3
4,5	5,0	2,0	7,5	5,2	10,0	8,0
5,0			7,5	4,7	10,0	7,7
5,5					10,0	7,4
6,0					12,5	10,0
6,5					12,5	9,7
7,0					12,5	9,4

Pressure drop diagram*



Models:

- 1 ARS-75-5
- 2 ARS-75-7,5
- 3 ARS -75-10
- 4 ARS -75-12,5
- 5 ARS -100-5
- 6 ARS -100-7,5
- 7 ARS -100-10
- 8 ARS -100-12,5
- 9 ARS -125-5
- 10 ARS -125-7,5
- 11 ARS -125-10
- 12 ARS -125-12,5
- 13 ARS -150-5
- 14 ARS -150-7,5
- 15 ARS -150-10
- 16 ARS -150-12,5

*The measurements were done with rolled down exhaust hose

ARM MOTORIZED HOSE REELS

Function

Motorized hose reels ARM are most efficient solution for truck, bus and off-road vehicles repair boxes, or any other garage or manufacturer with high ceilings at their stationary working places. Hose moves with the car when car is on the lift. The hose reel works either with a fan or is connected directly to the centralized ventilation system.

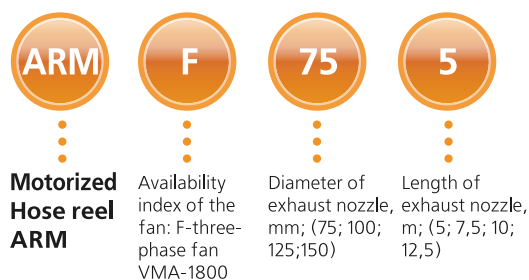
Design features and advantages

Exhaust reel consist of an exhaust hose with stopper and an exhaust nozzle rolled up on a drum. The reel can be equipped with an individual fan (optional).

When the hose reel is inactive, the hose is rolled up on the drum. The free hose end with the exhaust nozzle doesn't touch the ground and doesn't distribute anyone. When the service technician wants to use the exhaust hose, he just presses an up/down switch on the wall (or a remote control). The motor has an on/off switch that allows to fix the hose at any level as well as an automatic end stop. When the hose is not in use, you can just return the hose back to the reel.

Product range and naming

- Models ARM-150-12,5 hose reels without fan will fit with the flange for 160 mm duct connecting and allow use of exhaust hose up to 12,5 m. Supplied with a stationary control panel.
- Models ARMF-150-12,5 - hose reels with VMA-1800 fan (w/o upstream end). Model ARMF allows using exhaust hose up to 12,5 m. Supplied with a stationary control panel.

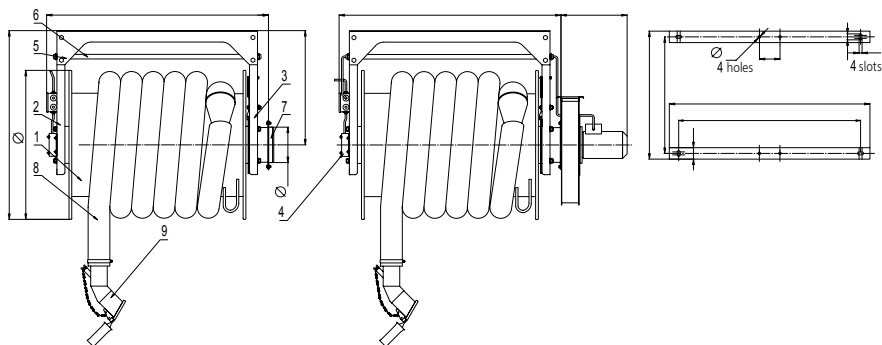


ARM/ARMF MOTORISED HOSE REELS

Main components, overall and installation dimensions

Hose reel ARM

Hose reel ARMF



- | | | |
|------------------------|----------------|--------------------------|
| 1 Drum | 5 Beam | 9 Exhaust nozzle |
| 2 Drive support | 6 Buckle | 11 Exhaust nozzle |
| 3 Duct support | 7 Flange | 12 Drum's spring stopper |
| 4 Electric motor drive | 8 Exhaust hose | |

Technical characteristics*

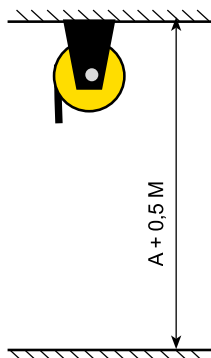
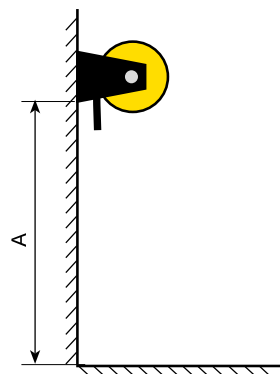
Art. N° ARM/ ARMF	Model	Exhaust hose		L, (mm)	I, (mm)	H, (mm)	Weight w/o hose, (kg)		Recom- mended airflow (m³/h)
		Diameter, (mm)	Length, (m)				ARM	ARMF	
6675/5674	ARM/ARMF-75-5	75	5,0	970	796	880	53,5	67,5	270
6675/5676	ARM/ARMF-75-12,5	75	12,5	970	796	880	61,0	75,0	270
6676/5676	ARM/ARMF-100-5	100	5,0	970	796	880	55,0	69,0	370
6676/5676	ARM/ARMF-100-10	100	10	970	796	880	62,5	76,5	370
6677/5678	ARM/ARMF-100-12,5	100	12,5	1120	946	1030	68,0	82,0	370
6678/5679	ARM/ARMF-125-5	125	5,0	970	796	880	57,5	71,5	600
6678/5679	ARM/ARMF-125-7,5	125	7,5	970	796	880	63,0	77,0	600
6679/5681	ARM/ARMF-125-10	125	10	1120	946	1030	69,0	83,0	600
6680/5682	ARM/ARMF-125-12,5	125	12,5	1220	1146	1230	72,0	86,0	600
6681/5683	ARM/ARMF-150-5	150	5,0	970	796	880	59,0	73,0	800
6681/5683	ARM/ARMF-150-7,5	150	7,5	970	796	880	65,0	79,0	800
6682/5684	ARM/ARMF-150-10	150	10	1120	946	1030	71,5	85,5	800
6683/5685	ARM/ARMF-150-12,5	150	12,5	1220	1146	1230	78,0	92,0	800
6105/5155	ARM/ARMF-200-10	200	10	1380	1202	1200			1200
6105/5155	ARM/ARMF-200-12,5	200	12,5	1380	1202	1200			1200

Fan type	Power, kW	Frequency	Power supply, V
Three-phase	0,55	2730	380

* The measurements were done with rolled down exhaust hose

ARM/ARMF MOTORIZED HOSE REELS

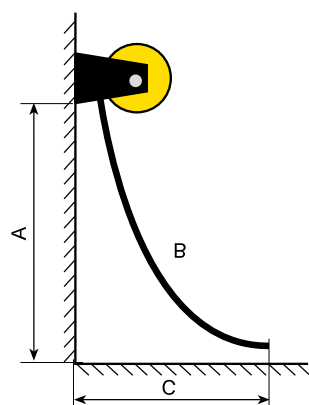
Installation options



A max, mm	Hose length, m
3,0	5,0
5,5	7,5
8,0	10,0



Service area

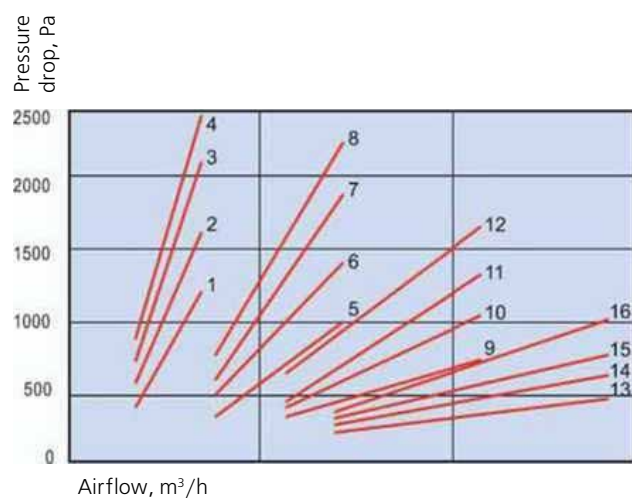


A, m	B, m	C, m	B, m	C, m	B, m	C, m
2,5	5,0	3,8				
3,0	5,0	3,5	7,5	6,2		
3,5	5,0	3,2	7,5	5,9	10,0	8,5
4,0	5,0	2,7	7,5	5,5	10,0	8,3
4,5	5,0	2,0	7,5	5,2	10,0	8,0
5,0			7,5	4,7	10,0	7,7
5,5					10,0	7,4
6,0					12,5	10,0
6,5					12,5	9,7
7,0					12,5	9,4

A - Mounting height
B - Hose height
C - Max range



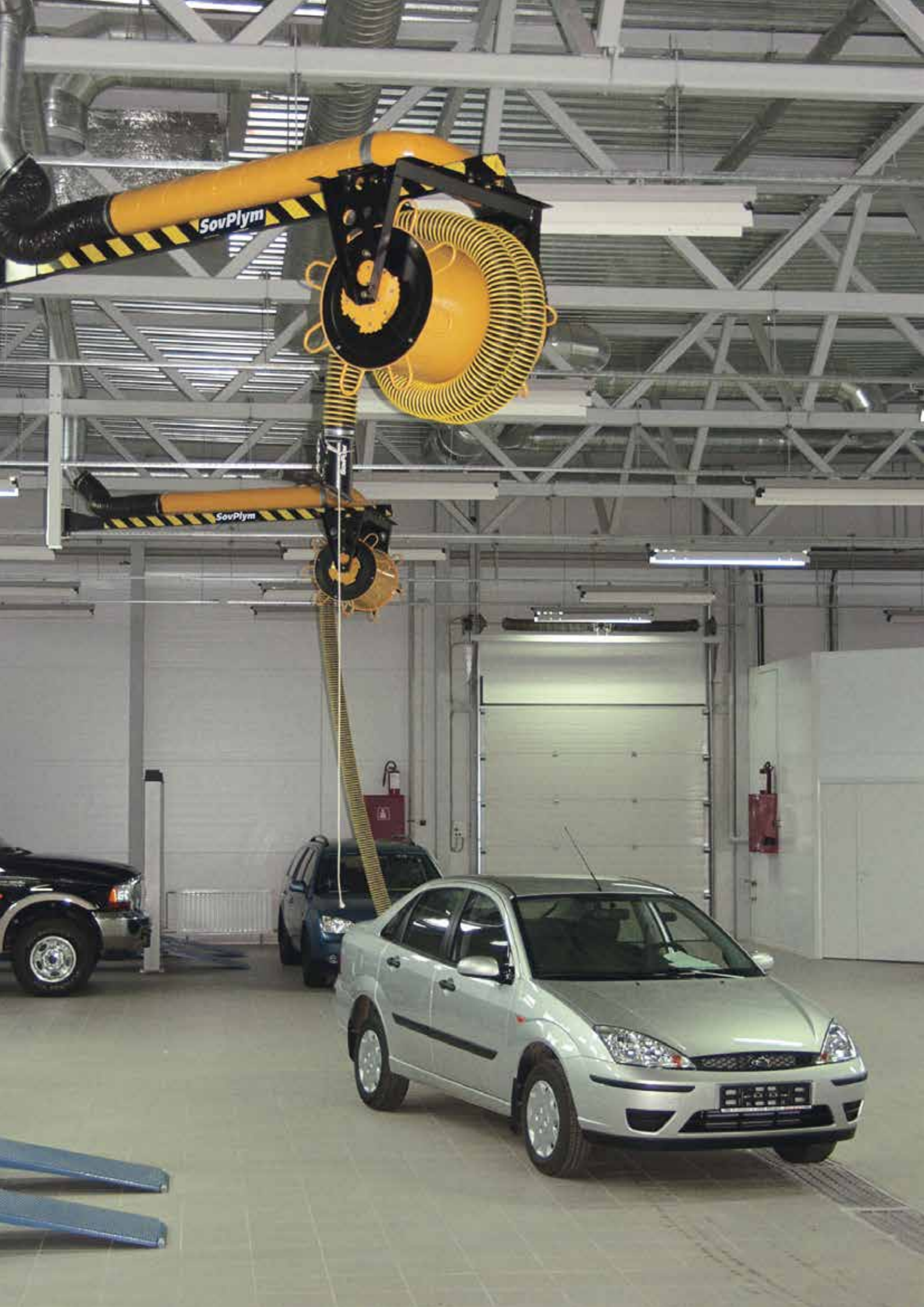
Pressure drop diagram*



Models:

- 1 ARM(F)-75-5
- 2 ARM(F)-75-7,5
- 3 ARM(F)-75-10
- 4 ARM(F)-75-12,5
- 5 ARM(F)-100-5
- 6 ARM(F)-100-7,5
- 7 ARM(F)-100-10
- 8 ARM(F)-100-12,5
- 9 ARM(F)-125-5
- 10 ARM(F)-125-7,5
- 11 ARM(F)-125-10
- 12 ARM(F)-125-12,5
- 13 ARM(F)-150-5
- 14 ARM(F)-150-7,5
- 15 ARM(F)-150-10
- 16 ARM(F)-150-12,5

*The measurements were done with rolled down exhaust hose



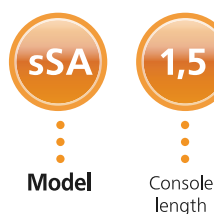
sSA TURNING CONSOLE

Function

Turning console is designed to increase the service area of the exhaust reel. With a turning console you can install the reel near the work area when standard installations aren't possible.

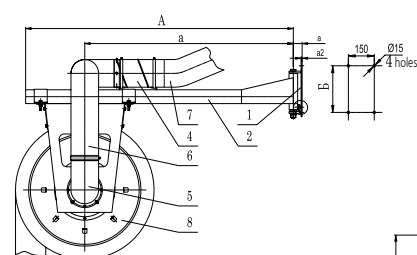
Design features and advantages

Turning console sSA consists of console arm and a mounting plate. Air ducts are mounted on the arm. To optimize service area the hose reel is attached to the free end of the arm. Console's brake system provides easy moving and fixation of the unit. The console can rotate 180°. Turning console may be wall mounted or on a pillar.



PIC. 1 (sSA-1,5; 2,5; 3,5)

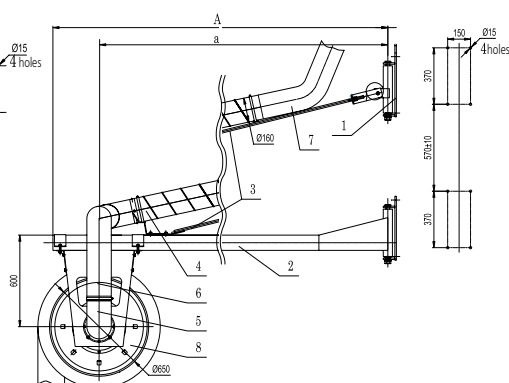
The layout of mounting holes on mounting plate



- 1 Mounting plate
- 2 Console beam
- 3 Draught (sSA-4,5 only)
- 4 Steel hard duct
- 5 Pipe bend
- 6 Flexible metal duct

PIC. 2 (sSA-4,5)

The layout of mounting holes on mounting plate



- 7 Hose 160 mm
- 8 Exhaust reel

Technical characteristics

Art. N°	Model	Duct diameters, mm	A, mm	a, mm	B, mm	Max. pressure drop, Pa	Weight, kg
5607	sSA-1.5	160	1550	1208	270	50	20
5608	sSA-2.5	160	2550	2208	270	50	40
5609	sSA-3.5	160	3532	3190	370	50	50
5610	sSA-4.5	160	4530	4228	370	50	60





iDROP HANGING EXTRACTION UNIT

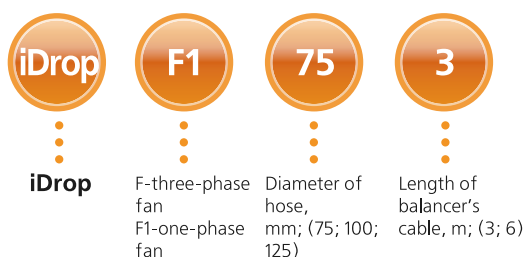
Function

iDrop is an easy but very efficient solution for small repair boxes and garages with stationary working places. iDrop is designed to work in rooms with a normal temperature range of -10° to +40°C. The iDrop either is installed with a separate fan, or is connected directly to the centralized ventilation system.

Design features and advantages

iDrop consists of an exhaust hose with a nozzle, which hangs in a loop, carried by a balance block. To use the iDrop, just pull out the needed length of the hose, where it automatically locks. When ready, disconnect the nozzle from the exhaust pipe, a quick pull in the carrier, and the hose returns to its start position.

- Type of exhaust hose and nozzle depends on the demands of resistance and durability
- Exhaust unit can be wall-, ceiling-, column- or arm-mounted.

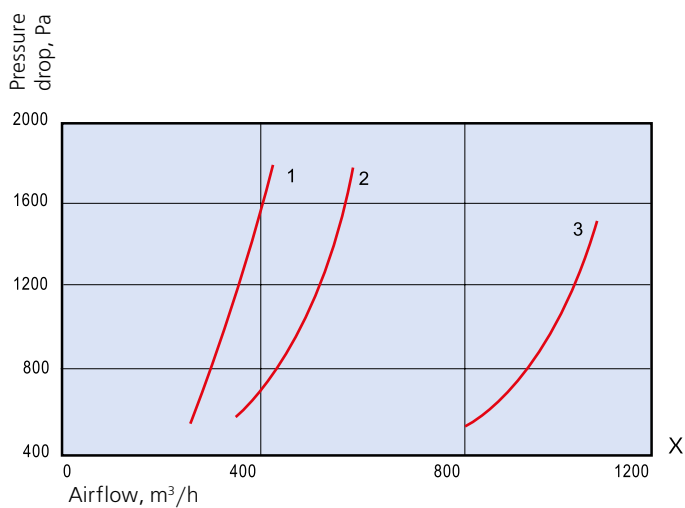


iDROP HANGING EXTRACTION UNIT

Technical characteristics

Art. N°	Model	Exhaust hose		Weight, kg	Fan FR series		Recommended airflow (m³/h)
		Diam., (mm)	Length, (m)		Power, kW	Frequency, RPM	
5009	iDrop-75-3	75	5	9,5	-	-	270
5010	iDrop -75-6	75	7,5	9,7	-	-	270
5011	iDrop -100-3	100	5	9,7	-	-	370
5012	iDrop -100-6	100	7,5	9,9	-	-	370
5013	iDrop -125-3	125	5	9,8	-	-	600
5014	iDrop -125-6	125	7,5	10,0	-	-	600
5015	iDropF-75-3	75	5	23,6	0,55	2730	270
5016	iDropF-75-6	75	7,5	23,8	0,55	2730	270
5017	iDropF-100-3	100	5	23,8	0,55	2730	370
5018	iDropF-100-6	100	7,5	24,0	0,55	2730	370
5019	iDropF-125-3	125	5	23,9	0,55	2730	600
5020	iDropF-125-6	125	7,5	24,1	0,55	2730	600
5021	iDropF1-75-3	75	5	26,9	0,55	2840	270
5022	iDropF1-75-6	75	7,5	27,1	0,55	2840	270
5023	iDropF1-100-3	100	5	27,1	0,55	2840	370
5024	iDropF1-100-6	100	7,5	27,3	0,55	2840	370
5025	iDropF1-125-3	125	5	27,2	0,55	2840	600
5026	iDropF1-125-6	125	7,5	27,4	0,55	2840	600

Pressure drop diagram

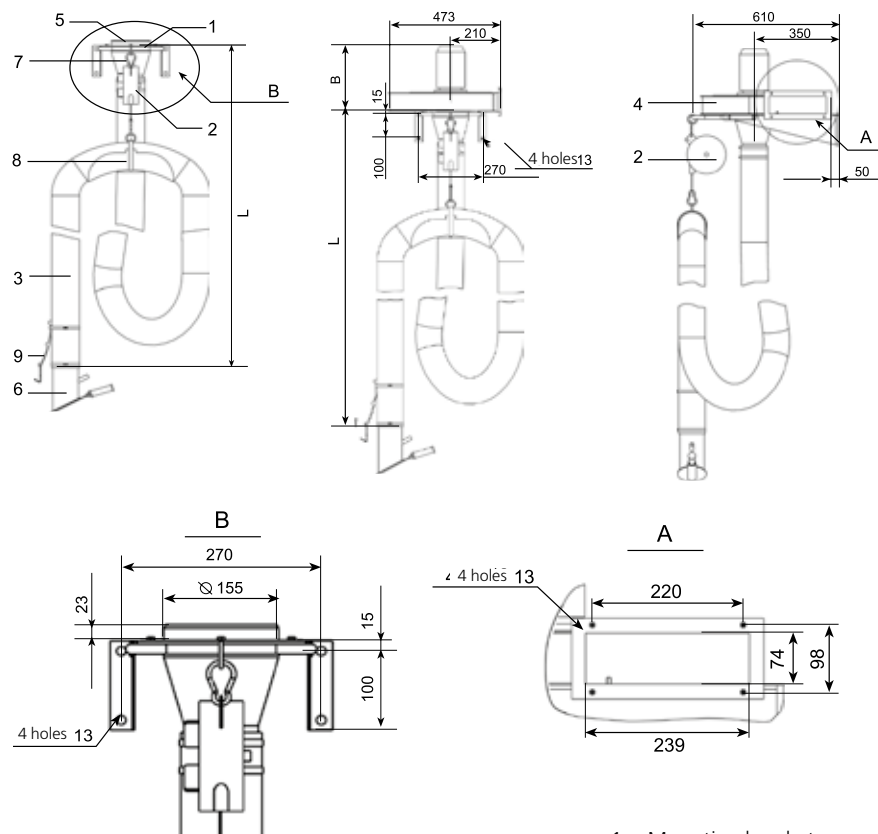


Models:

- 1 iDropxx-75-xx
- 2 iDropxx-100-xx
- 3 iDropxx-125-xx

iDROP HANGING EXTRACTION UNIT

Main components, overall and installation dimensions



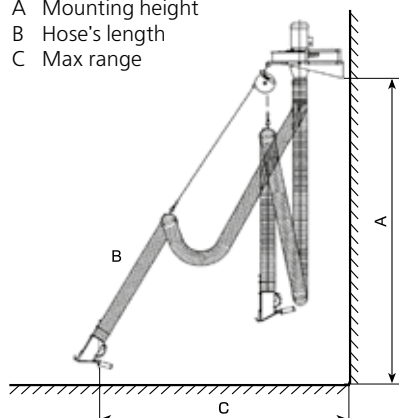
Hose length, m	L, mm
5	2160
7,5	2960
10	3160

iDrop designation	B, mm
iDropF	287
iDropF1	313

- 1 Mounting bracket
- 2 Balancer
- 3 Exhaust hose
- 4 Fan*
- 5 Flange**
- 6 Exhaust nozzle
- 7 Cone
- 8 Rubber support
- 9 Rubber belt with hook

Service area

- A Mounting height
B Hose's length
C Max range



A,m	B,m	C,m	B,m	C,m
2,5	5	4,5		
3	5	4,2	7,5	7,0
3,5	5	3,7	7,5	6,7
4	5	3,1	7,5	6,5
4,5	5	2,3	7,5	6,1
5		7,5	5,7	
5,5		7,5	5,2	
6		7,5	4,6	

* for iDropF/iDropF1
** for iDrop





VEGA EXTRACTION UNIT

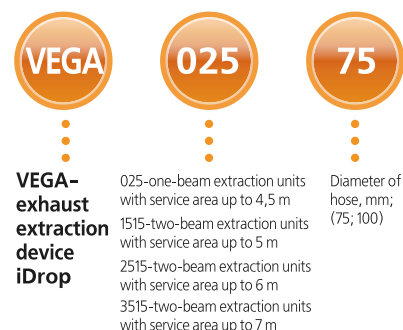
Function

Vega is the easiest and the most efficient solution for small repair boxes and garages with stationary working places. Vega has large service area and is designed for indoor operations at temperature range from -10°C to $+40^{\circ}\text{C}$ and relative humidity 98% at 25°C . Hose moves with the car when it is on the lift. Vega is usually equipped with a fan, but in some cases the unit is connected directly to the centralized ventilation system.

Design features and advantages

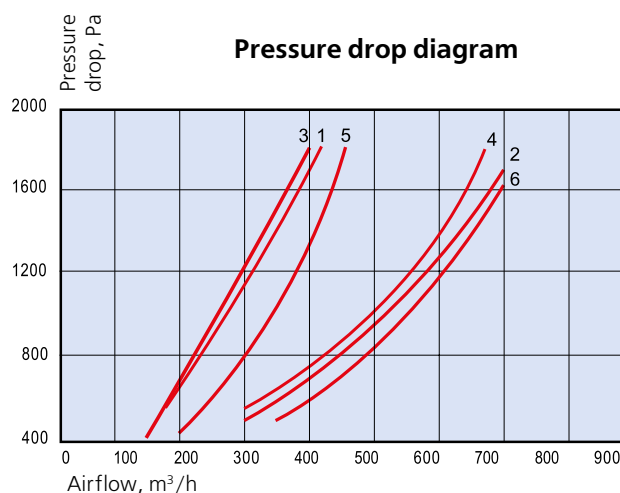
Exhaust unit consists of bracket-swing mechanism, mounting plate with stoppers, exhaust hose that is supported by balancer and exhaust nozzle. Due to its design Vega unit can be moved easily and fixed in required position. When the unit's hose is not used, it is supported by the balancer in the upper position, so that the loose end of the hose with exhaust nozzle doesn't lie on the floor and get in the way of moving vehicles and workers. To connect the hose with nozzle to the exhaust pipe of a vehicle it's needed to pull the hose and fix it on the pipe with the strap. After the work it is needed to disconnect the nozzle from the exhaust pipe and balancer will pull the hose back to the upper position.

- Standart exhaust devices are delivered with HoseSP with thermal resistance 150°C and ducts with 160 mm diameter
- Exhaust device is mounted with mounting bracket on wall, ceiling, column or beams fastened on a ceiling



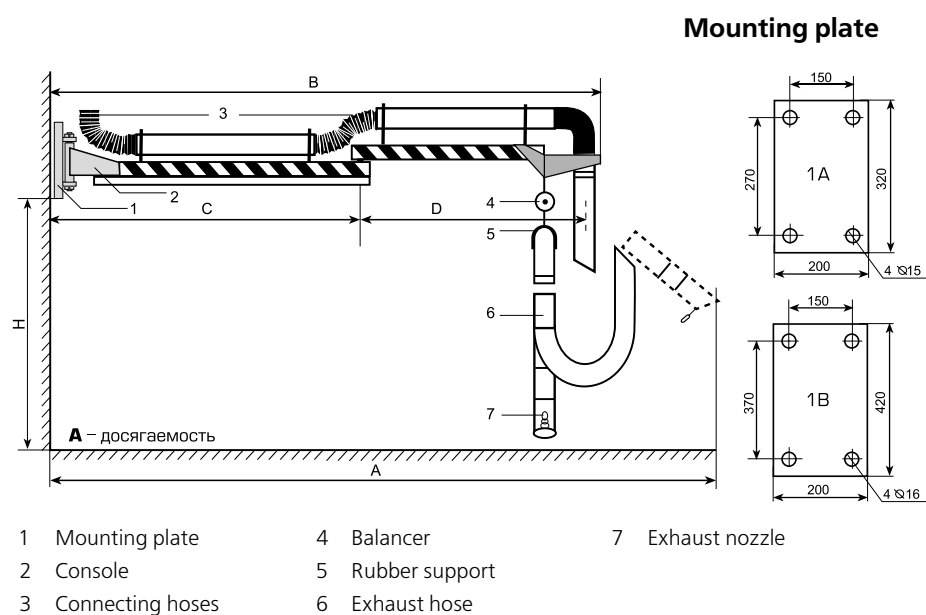
Models:

- 1 iDropxx-75-xx
- 2 iDropxx-100-xx
- 3 iDropxx-125-xx



VEGA EXTRACTION UNIT

Main components, overall and installation dimensions



Model	A mm	B, mm	C, mm	D, mm	H, mm
VEGA-025	4000	3000	2500	-	3200
VEGA-1515	5000	3000	1560	1410	3200
VEGA-2515	6000	4000	2560	1410	3200
VEGA-3515	7000	5000	3560	1410	3200

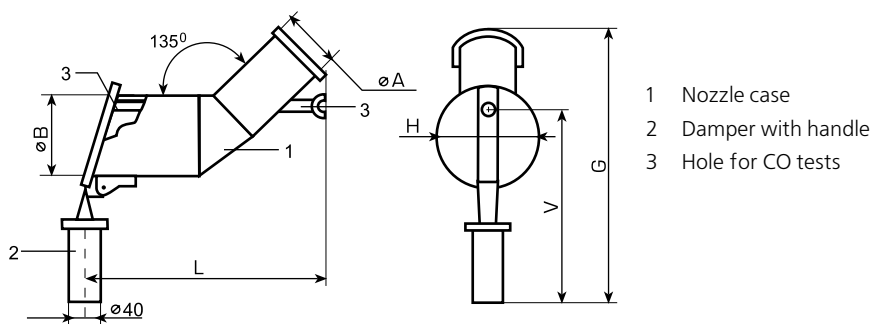


Technical characteristics

Art. №	Model	Exhaust hose		maximum radius of working area, m	Recommended airflow. (m³/h)	Weight, kg
		Diameter, mm	Length, m			
5143	VEGA-025-75	75	5	4,5	270	42
5144	VEGA-025-100	100	5	4,5	370	42
5148	VEGA-1515-75	75	5	5,0	270	62,1
5149	VEGA-1515-100	100	5	5,0	370	66,5
5153	VEGA-2515-75	75	5	6,0	270	71,8
5154	VEGA-2515-100	100	5	6,0	370	66,3
5158	VEGA-3515-75	75	5	7,0	270	71,8
5159	VEGA-3515-100	100	5	7,0	370	76,3

A yellow and black flexible hose with a black nozzle and a chain, hanging vertically against a white background. The hose is coiled and has a black nozzle attached to the end. A chain is attached to the side of the nozzle. The nozzle has the number '55' on it.

Steel exhaust nozzle iGripST series can be used with high temperature exhaust gases. Made by 2 mm steel, the nozzle has a heat resistance, up to 650°C. The 45° pipe-bend, together with its spring loaded rubber flap, holds the nozzle to the exhaust pipe. The spring-loaded rubber flap also prevents any air leakage when it isn't in use. The nozzle has a 20 mm hole for CO tests.



Art. N°	Model	Exhaust hose Ø A, mm	Hole Ø, B, mm	H, mm	G, mm	L, mm	V, mm	Weight, kg
6112	iGripST-75-75/SP	75	75	95	324	279	254	0,8
6113	iGripST-75-100/SP	75	100	120	349	306	292	0,9
6115	iGripST-100-100/SP	100	100	120	364	337	292	1,2
6116	iGripST-75-125/SP	75	125	145	374	351	329	1.2
6117	iGripST-100-125/SP	100	125	145	389	377	392	1,3
6118	iGripST-100-150/SP	100	150	170	414	415	367	1.4
6119	iGripST-125-125/SP	125	125	145	404	404	329	1.5
6120	iGripST-125-150/SP	125	150	170	429	443	367	1,6
6111	iGripST-150-150/SP	150	150	170	429	471	367	1,8



Conic exhaust nozzle fitting $\varnothing 100$ and $\varnothing 125$ mm hoses. Comfortable and easy operation. Suitable for vehicles and light trucks with exhaust pipes from 50 to 115 mm diameter.



EXHAUST NOZZLES

iGrip R Features and advantages

- Rubber provides an easy connecting to any oval exhaust pipe or insert it to car's bumper «build-in» exhaust pipe
- 100% rubber prevents any possibility to damage the wheels or the bumper paintwork
- Heat resistance up to 220°C

6435	iGripR-100/150	Hose diameter 100mm, nozzle diameter 150mm.
6436	iGripR-125/150	Hose diameter 125mm, nozzle diameter 150mm.



iGripR(G) nozzle is suitable for rail systems with moving cars. A Clamp provides a strong connection to the exhaust pipe. You can adjust the force to fit smoothly to the exhaust pipe.

Rubber exhaust nozzle with mechanizal clamp iGripR (G)

6437	iGripR-100/150G	Hose diameter 100mm, nozzle diameter 150mm.
6438	iGripR-125/150G	Hose diameter 125mm, nozzle diameter 150mm.



iGripSK exhaust nozzle for vertical exhaust pipe.

iGripSK nozzle is intended for truck's vertical exhaust pipes. The nozzle is made by galvanized steel and has an adapter with telescopic tube to help placing the nozzle on to exhaust pipe. Telescopic tube STH-90 has an adjustable length from 2 to 3m.

6696	iGripSK-125-200	Hose diameter 125 mm, nozzle diameter 200 mm.
6697	iGripSK-150-200	Hose diameter 150 mm, nozzle diameter 200 mm.
6698	iGripSK-150-250	Hose diameter 150 mm, nozzle diameter 250 mm.



EXHAUST HOSES

Flexible heat-resistant hoses use for exhaust extraction

Recommendation list

Type of vehicle	Power of the engine (HP)	Air consumption for suction device	Diameter of hose (mm)
Motorbikes and cars	Up to 120	250-350	75-100
Cars, minibuses, light trucks	120-180	350-500	100-125
Buses and trucks	180-240	500-650	125-150
Trucks	240-300	650-800	150
Trucks	More than 300	800-1080	150

HoseSP-150

The hose is made of durable material, resistant to chemical effect and deformations, with temperature resistance up to 150°C.

Art. N°	Model	Diameter, mm	Standart length, m
90021	HoseSP-150-75	75	5/7,5/10/12,5
90020	HoseSP-150-100	100	
90022	HoseSP-150-125	125	
90023	HoseSP-150-150	150	
91532	HoseSP-150-200	200	

HoseSP-200

The hose made from durable material, resistant to chemical effect and deformations, with temperature resistance up to 200°C.

Art. N°	Model	Diameter, mm	Standart length, m
90024	HoseSP-200-75	75	5/7,5/10/12,5
90025	HoseSP-200-100	100	
90026	HoseSP-200-125	125	
90027	HoseSP-200-150	150	
91533	HoseSP-200-200	200	

EXHAUST HOSES

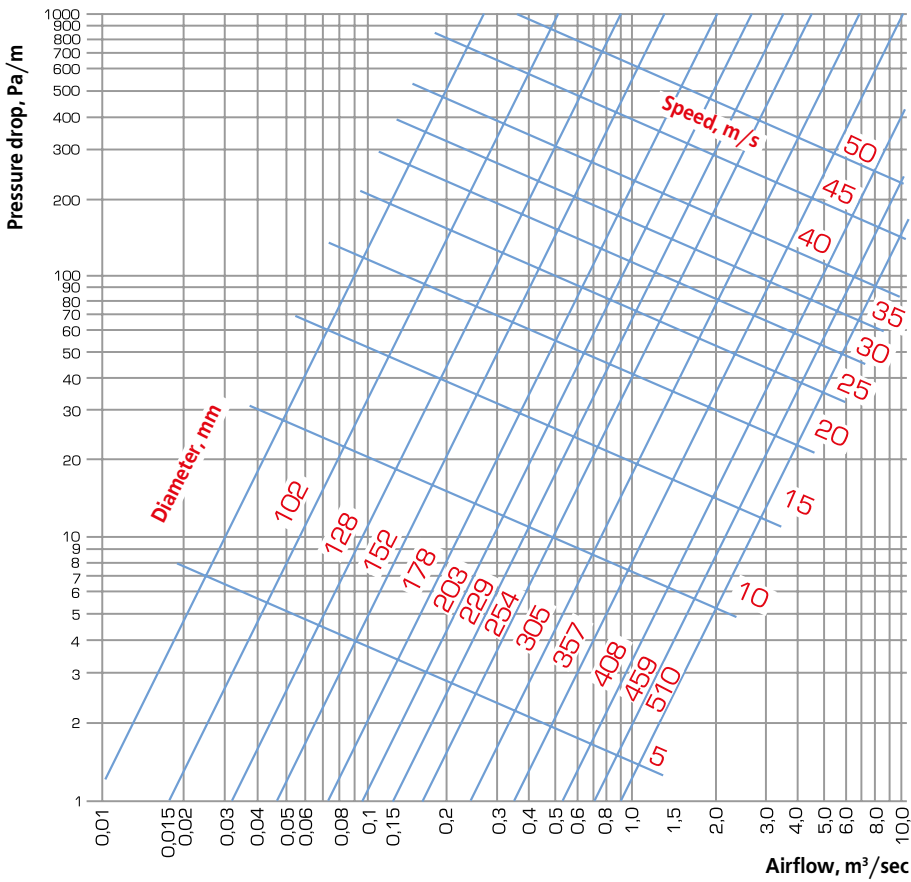
Flexible heat-resistant hoses use for exhaust extraction systems

HoseSP-300

The hose made of durable material, resistant to chemical effect and deformations, with temperature resistance up to 300°C.

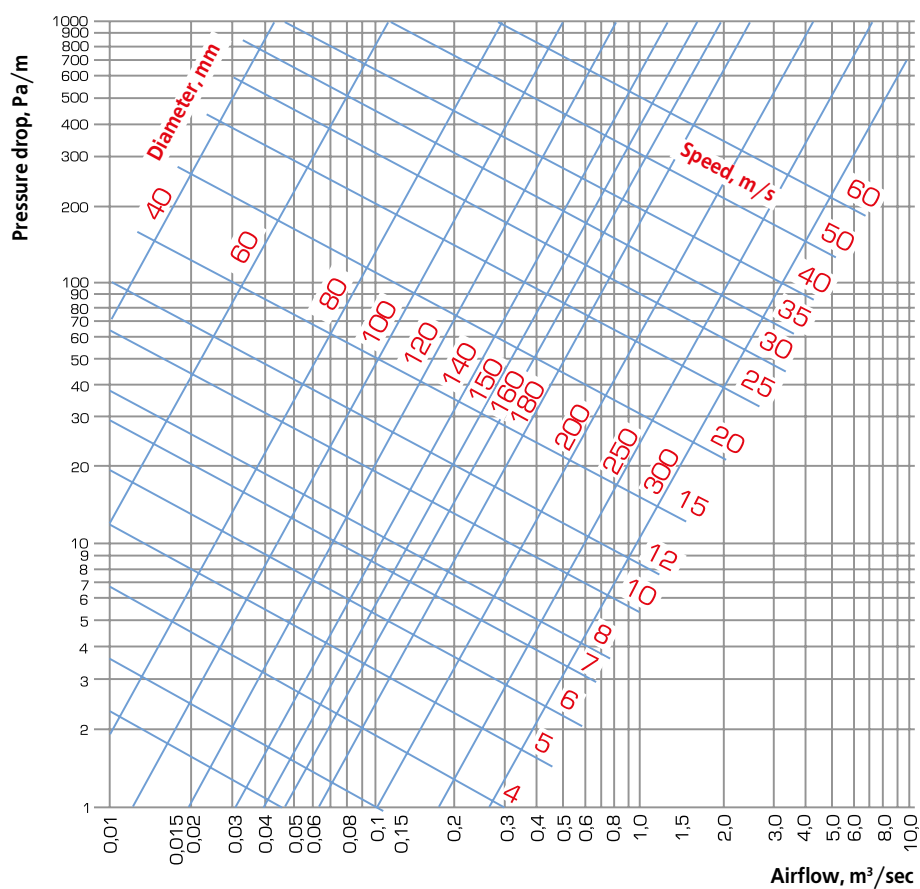
Art. N°	Model	Diameter, mm	Standart length, m
90028	HoseSP-300-75	75	5/7,5/10/12,5
90029	HoseSP-300-100	100	
90030	HoseSP-300-125	125	
90031	HoseSP-300-150	150	
91524	HoseSP-300-200	200	

Pressure drop diagram for exhaust hoses sp-200; 300



EXHAUST HOSES

Pressure drop diagram for exhaust hoses sp-150



HOSE SPLITTERS

To service cars with dual exhaust pipes the hose splitters are used. To be able to quickly switch from single hose to dual ones, use the MB quick-connector.

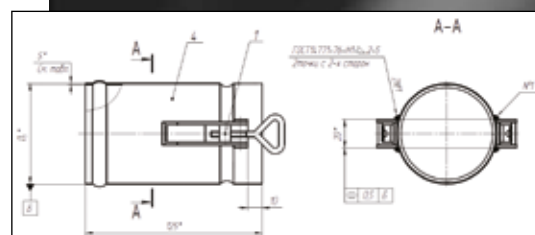
- Quick-connector MB
- Nipple NB
- YP splitter
- YPP splitter

HOSE SPLITTERS

Quick-connector MB

Quick-connector is used to connect YP/YPP splitters to main hoses

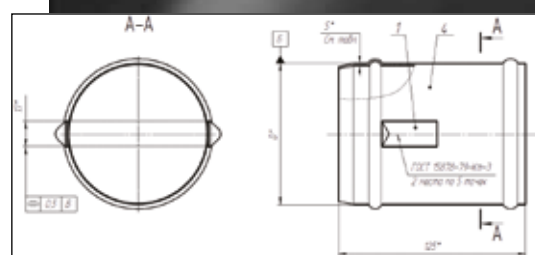
Art. N°	Model	Hose diameter, mm
6370	MB-75	75
6371	MB-100	100
6372	MB-125	125
6373	MB-150	150



Nipple NB

Nipple NB is used to connect hoses with nozzles to YPP splitters.

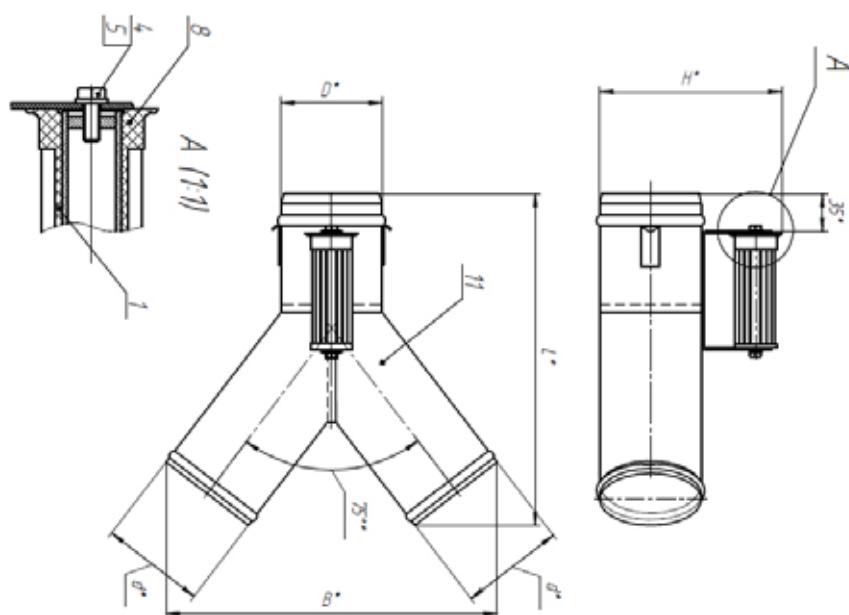
Art. N°	Model	Hose diameter, mm
6374	NB-75	75
6375	NB-100	100
6376	NB-125	125
6377	NB-150	150



YP splitter*

Hoses with nozzles are connected to YP splitter by spiral clamps.
YP splitter can be **quickly disconnected from the main hose** using MB Quick-connector that is ordered separately.

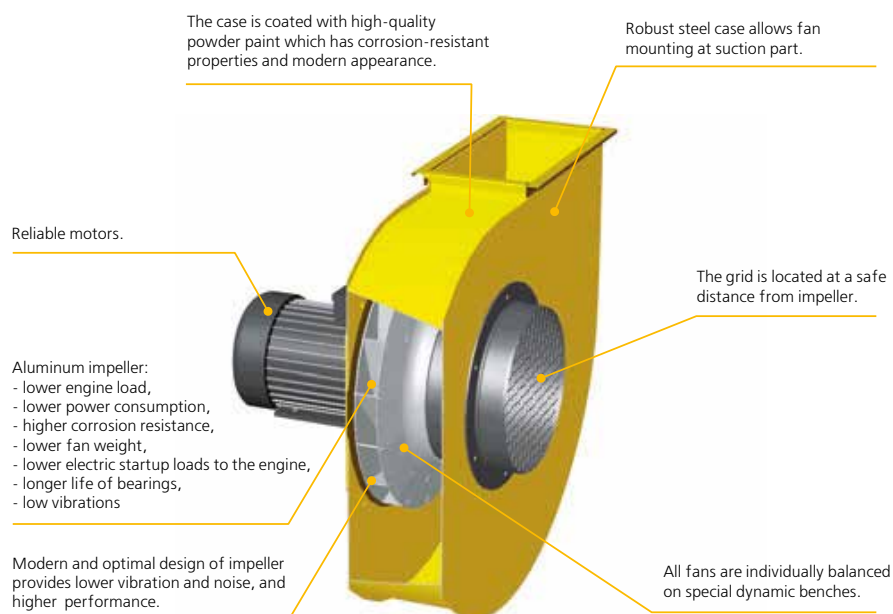
Art. N°	Model	Connected hose diameter, mm	Main hose diameter, mm
6365	YP -75-2 -75	75	75
6366	YP -100-2 -75	75	100
6367	YP -100-2 -100	100	100
6368	YP -125-2 -100	125	100
6369	YP -125-2 -125	125	125



*YP differs from YPP ; the quick release on YP is on the single outlet, while YPP has quick release on both inlets.

RADIAL FANS

VentMax SERIES VMK



Design features and advantages

Fans of this series feature round inlet connection and square outlet connection except for VM-FSB fans equipped with round outlet connection. Impeller rotates to the left direction (counter-clockwise relatively the side of inlet connection). Fans are equipped with single-phase or three-phase motors. Advantages of our fans include high CPA (efficiency coefficient), long service life, low vibration and noise levels, ease of usage and maintenance.

Fan selection guidelines

Fan type (VM-1800, 2100 etc.) is selected by required airflow depending on the pressure drop in ventilation system. Then fan version (VMK, VMS, VMA) is selected depending on installation needs and possibilities.



RADIAL FANS OF VentMax SERIES VMK

Aerodynamic characteristics

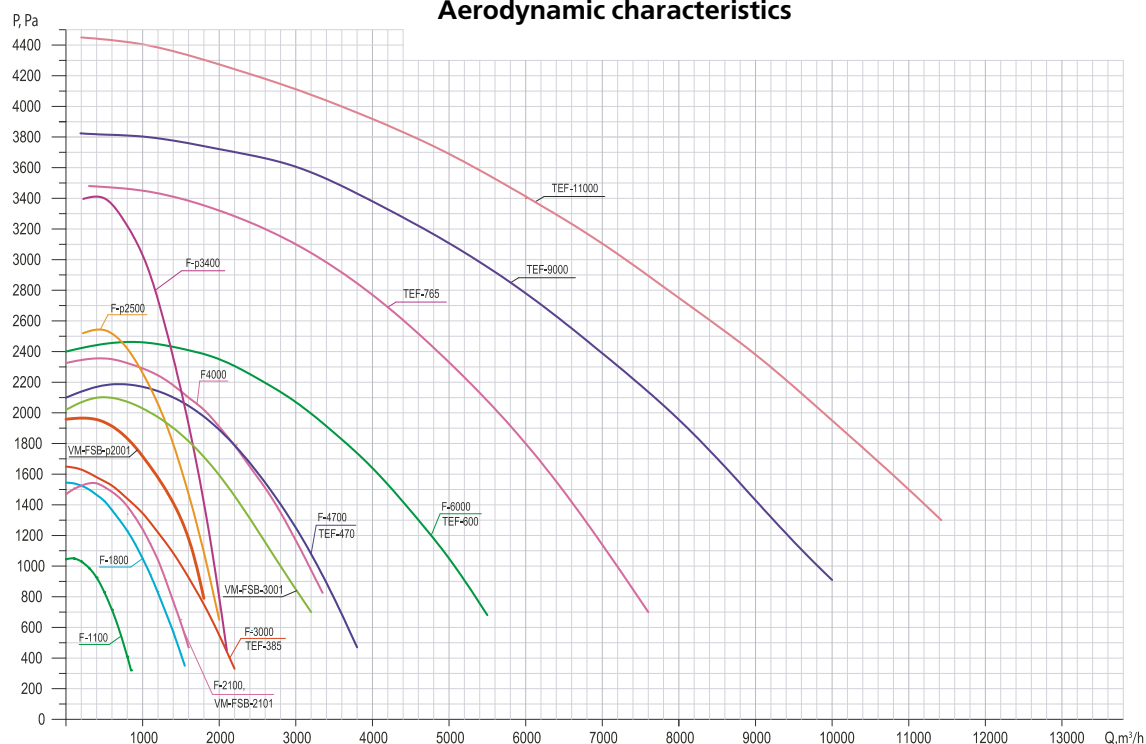


Table of radial fan's thermal relay characteristics

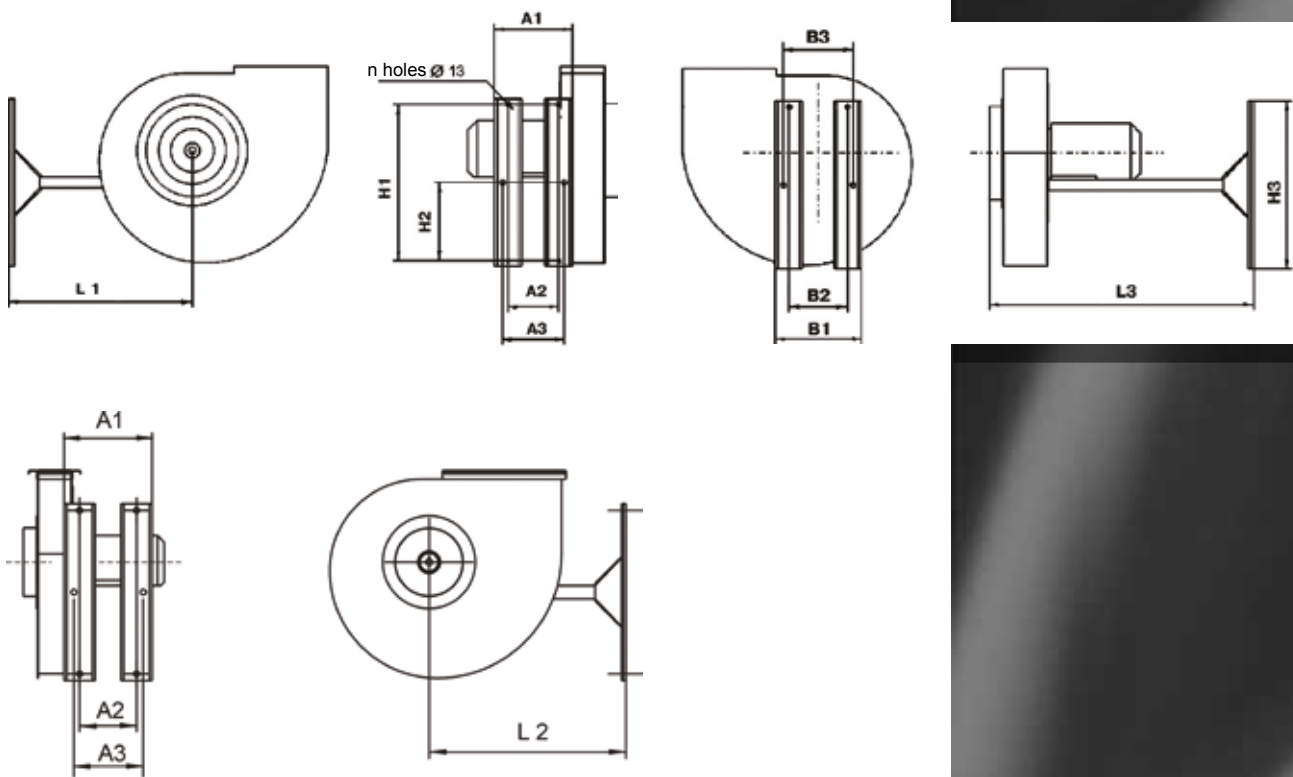
Art. N°	Model	Voltage, V	Engine power, kWt	Pressure Pa	Airflow m³/h
5784	VMK-1100	3/380	0,37	1100-400	200-1050
5785	VMK-1101	1/220	0,37	1100-400	200-1050
5045	VMK-1800	3/380	0,55	1530-1000	300-1200
5185	VMK-1800pr.	3/380	0,55	1530-1000	300-1200
5071	VMK-1801	1/220	0,55	1530-1000	300-1200
5050	VMK-2100	3/380	0,75	1600-1000	500-1600
5186	VMK-2100pr.	3/380	0,75	1600-1000	500-1600
5073	VMK-2101	1/220	0,75	1600-1000	500-1600
5058	VMK-3000	3/380	1,1	1500-900	500-2300
5059	VMK-3000pr.	3/380	1,1	1500-900	500-2300
5075	VMK-3001	1/220	1,1	1500-900	500-2300
5728	VMK-4000	3/380	1,5	2300-600	800-4000
5730	VMK-4000 pr.	3/380	1,5	2300-600	800-4000
5729	VMK-4001	1/220	1,5	2300-600	800-4000
5731	VMK-4001 pr.	1/220	1,5	2300-600	800-4000
5062	VMK-4700	3/380	2,2	2380-1200	1000-4000
5188	VMK-4700pr.	3/380	2,2	2380-1200	1000-4000
5266	VMK-6000	3/380	4,0	2500-1400	1500-5000
5189	VMK-6000pr.	3/380	4,0	2500-1400	1500-5000

Note: SovPlym JSC has the right to modify fan's electric motor design.



RADIAL FANS

OF VentMax SERIES **VMK**



Fan type	A1	A2	A3	B1	B2	B3	H1	H2	H3	L1	L2	L3	n
VMK-1800	179	119	-	199	139	-	370	-	400	235...446	330...446	625...645	4
VMK-1801, 2100, 2101	189	129	-	211	151	-	370	-	400	235...440	330...440	625...650	4
VMK-3000, 3001	189	129	-	211	151	-	370	-	400	260...440	365...440	640...675	4
VMK-P2500	189	129	-	211	151	-	370	-	400	260...440	365...440	640...675	4
VMK-P3400	212	142	172	237	167	197	420	210	450	320...483	430...483	780...809	6
VMK-4000, 4001	212	142	172	237	167	197	420	210	450	278...470	410...470	740...765	6
VMK-4700	212	142	172	237	167	197	420	210	450	320...483	430...483	780...809	6
VMK-6000	224	154	184	272	202	232	420	210	450	320...483	430...483	780...822	6



ARSL EXHAUST GAS REMOVAL SYSTEM

with sliding balancer for fire and rescue stations

Straight-rail system ARSL is the best solution for fire and rescue stations with one car parking space indoors. Pneumatic exhaust nozzle (Exhaust Pipe Squeezer) provides automatic disconnection from the exhaust pipe when the vehicle leaves. Such system is suitable for vehicles with an exhaust pipe located in the bottom or rear side of the vehicle. Delivery set comes with all components needed for installation and operation. The fan and fan automatic on/off system should be ordered separately.

Features and benefits

- Free movement of the car
- Autodisconnect at the exit door
- Automatic fan start-stop by exhaust gas sensor
- 100% at source exhaust capture through a unique Exhaust Pipe Squeezer
- the possibility to connect multiple systems to one central extraction system

Operation

The ARSL system consists of a special and easily visible exhaust hose assembled with ExhaustPipeSqueezer (ESQ), an inflatable rubber bladder, connected to the hose through a reducer. The ESQ when filled with compressed air makes a total seal around the exhaust pipe for 100% capture of emissions. The three section aluminium track is designed so that two sections have open areas, underneath and one on top. The open area on top is used for positioning the support legs, duct, exhaust hose connector and the release valve.

The open area underneath is used for positioning the end locks and the sliding carriage. When the vehicle starts moving hose assembly and the carriage travel along with it. The moment the carriage slides under a release valve it immediately releases the air pressure in ESQ, disconnecting it from the vehicle. The carriage travels to the rubber shock absorber at the exit end, that absorbs its kinetic energy and stops it.

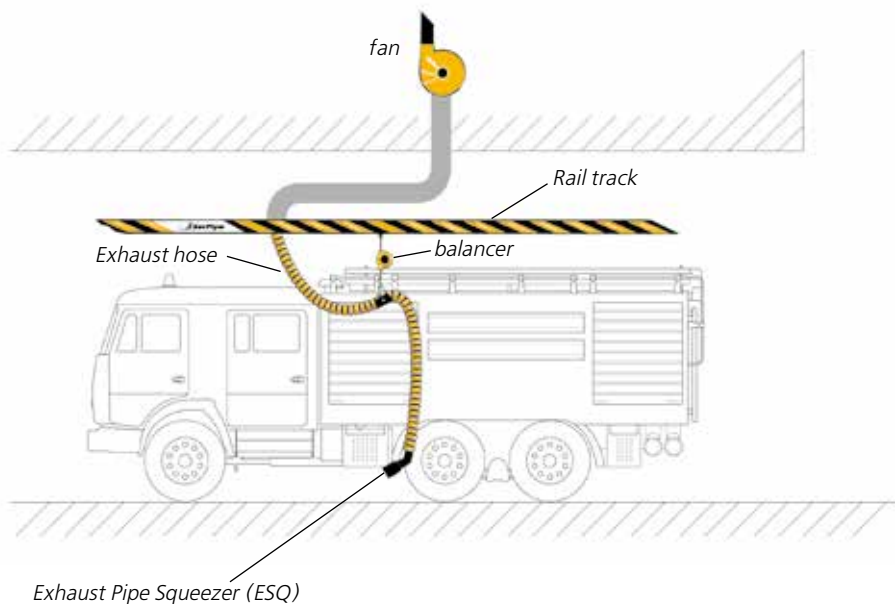
When the vehicle returns to the entrance of the station, the ESQ is connected to the exhaust pipe and activated by pressing the Manual Fill Deflation valve. At the same time the fan automatically starts up and the vehicle can continue to move to its parking place.



ARSL

EXHAUST GAS REMOVAL SYSTEM

with sliding balancer for fire and rescue stations



Product description and naming

Rail track length needs to be exactly the same as distance from entrance to parking lot which exhaust pipe of truck passes.

ARSL

ARSL- exhaust gas removal system with sliding balancer for fire and rescue stations

6

Rail length, m

W

Vertical

100

Exhaust hose diameter

Technical characteristics

Rail length	6; 9 m
Exhaust hose diameter	100; 125; 150 mm
Exhaust hose length	6; 10 m
Max T of exhaust	150°C
	180mm
Exhaust pipe diameter	60-170mm
Rail mounting height	
• Min	3,5 m
• Max	5,0 m
	100; 125; 150 mm
Compressed air pipe diameter	8 mm
Compressed air pressure	
• Min	1 atm
• Max	6 atm
Weight	
• ARSL-6	42 kg
• ARSL-9	49 kg





ARSL EXHAUST GAS REMOVAL SYSTEM

with sliding balancer for fire and rescue stations

Installation options

Wall (vertical) mounting

Ceiling (horizontal) mounting



ARSL with horizontal support



Art. N°	Model	ARSL		
		Rail length	Exhaust hose diameter	Exhaust hose length
5933	ARSL-6-100	6m	100mm	6m
5934	ARSL-6-125	6m	125mm	6m
5935	ARSL-6-150	6m	150mm	6m
5939	ARSL-9-100	9m	100mm	9m
5940	ARSL-9-125	9m	125mm	9m
5941	ARSL-9-150	9m	150 mm	9m

ARSL with vertical support



Art. N°	Model	ARSL		
		Rail length	Exhaust hose diameter	Exhaust hose length
5930	ARSL-6-W-100	6m	100mm	6m
5931	ARSL-6-W-125	6m	125mm	6m
5932	ARSL-6-W-150	6m	150mm	6m
5936	ARSL-9-W-100	9m	100mm	9m
5937	ARSL-9-W-125	9m	125mm	9m
5938	ARSL-9-W-150	9m	150 mm	9m

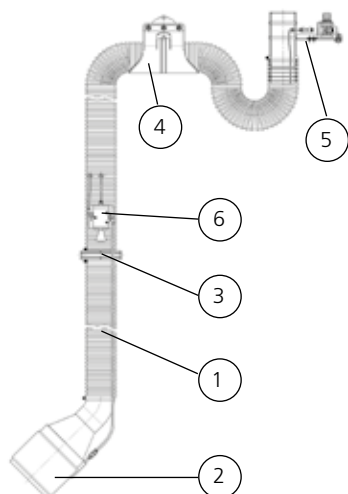
ARSL

EXHAUST GAS REMOVAL SYSTEM

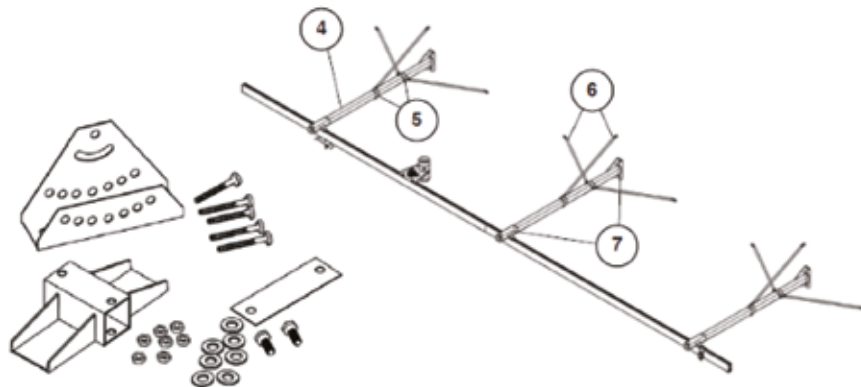
with sliding balancer for fire and rescue stations

Main components of ARSL system set

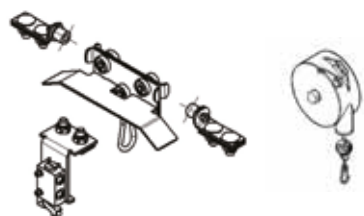
1. ARSL TRACK Aluminium rail track, length 5m
2. ARSL-HK-125-6 Exhaust hose and exhaust nozzle set



1. Exhaust hose
2. Pneumatic exhaust nozzle
3. Safety disconnect coupling
4. Hose rubber support
5. Hose mounting support
6. Compressed air valve



3. ARSL-KIT Set for mounting exhaust hose to system



1. Carriage for hose movement along rail track
2. End rail lock
3. Balancer
4. Valve for compressed air release

4. ARSL-SL Supporting leg, length 5,8 m
5. ARSL-SBCK clamp kit for mounting support leg
6. ARSL-SB-M Side brace kit
7. ARSL-MKH clamp kit for horizontal mounting of rail track





ARST STRAIGHT RAIL SYSTEM

for exhaust gases removal

Straight rail exhaust system ARST is designed for exhaust gases removal at the facilities where vehicles move along straight path of a certain length in a closed room, or, when connection of a large number of car servicing stationary posts arranged in rows to a ventilation system is required. The system is the most advanced and cost-effective solution for garages, control lines and stations, car maintenance, as well as other facilities, which have mobile sources of pollution.

Features and benefits

- ARST rail system - the only possible way to remove exhaust gases from a moving car
- light weight and easy mounting
- modular design
- adaptability for changing requirements – increased number of service posts can be achieved by simple adding installation of additional carriages with exhaust hoses and nozzles
- ability to service cars with two exhaust pipes, by using 2 carriages with separate exhaust hose and nozzle for each exhaust pipe.



Rail system set consists of 5 main parts:

- Rail track
- Carriage
- Balancer
- Exhaust hose
- Exhaust nozzle

Operation

Carriage, balancer, exhaust hose and nozzle are not included into standard set, they need to be ordered separately. As an option You can order safety quick-release coupling with diameter that fits to hose to prevent hose damage when car moves. Rail system works as a part of centralized ventilation system with fan, that provides necessary air volume through each exhaust nozzle and pressure capacity enough to compensate ventilation system resistance. Each of 5 main system components is chosen from different dimension types.

ARST

STRAIGHT RAIL SYSTEM

for exhaust gases removal

Rail track has longitudinal groove on bottom side, with rubber seals (12). Carriage moves on the rail track (2) with connected exhaust hose (6) and balancer (5) which holds hose using rubber support in loop form. Hose's free end with exhaust nozzle (7) is connected to car's exhaust pipe. **You need to disconnect exhaust nozzle manually when carriage reaches the end of rail track.** Carriage follows car on the rail track over outside surface of rail track. Carriage is equipped with gap nozzle, which slides between rail track's rubber seals and remove exhaust gases inside it.



Installation options

Horizontal variant (wall or column mounting)



Vertical variant (ceiling mounting)



Fan connection is made by end connection piece (3) or Side connection piece RRDC-200 (11). Side connection piece is used for long rail duct tracks (more than 12 m).

Side connection piece sRRDC-200



End connection piece sRRTP-160



Rail system is connected to central fan by ducts, their diameters and length depend on length of the system, number of connection points, room dimensions and fan location.

ARST

STRAIGHT RAIL SYSTEM

for exhaust gases removal

Rail system ARST is ordered and delivered as a complete installation set. You need to choose model, according to the rail track length depending on dimensions of room. Rail system length needs to be equal to the distance which cars pass from entrance to exit. Complete set consists of all necessary mounting elements. Mounting set is universal. It fits for mounting rail system on a vertical surface (wall or column) and on a horizontal (ceiling). If the standard rail track doesn't fit length requirements – rail track can be extended using separate elements : rail track sections, connection pieces, rubber seals etc.

Main components of ARST system

Rail system core is an aluminium circular cross-section rail track assembled of 5,8 or 2,9 m length sections.

Description	Model	Straight rail system ARST									
		L (length, m)									
		Art. №	5390	5391	5392	5393	5394	5395	5396	5397	5398
		5.8	8.7	11.6	14.5	17.4	20.3	23.2	26.1	29.0	
Aluminium profile L=5,8 m (pos. 1)	sRR-5,8	1	1	2	2	3	3	4	4	5	
Aluminium profile L=2,9 m (pos. 1)	sRR-2,9	—	1	—	1	—	1	—	1	—	
Rubber seal, m (pos. 12)	sRRRS-X	11,6	17,4	23,2	29	34,8	40,6	46,4	52,2	58	
Plug (pos. 4)	sRRZ	1	1	1	2	2	2	2	2	2	
End connection piece 160 mm (pos. 3)	sRRTP-160	1	1	1	—	—	—	—	—	—	
Side connection piece 350'60/ 200 mm, L=450 mm (pos. 11)	sRRDC-200	—	—	—	1	1	1	2	2	2	
Stationary support (pos. 14)	sKEC-F	2	3	3	4	4	5	5	6	6	
Turning support (pos. 13)	sKEC-M	4	5	5	6	6	7	7	8	8	
Console L=1 m (pos. 10)	sRRSS	2	3	3	4	4	5	5	6	6	
Tube 48mm, L=4m (pos. 9)	sTUB-4	2	3	3	4	4	5	5	6	6	
Turning double clamp (pos. 15)	sBUC-M	4	5	5	6	6	7	7	8	8	
Double clamp (pos. 16)	sBUC-F	2	3	3	4	4	5	5	6	6	
Connection piece (pos. 17)	sRRS	—	1	1	2	2	3	3	4	4	

ARST

STRAIGHT RAIL SYSTEM

for exhaust gases removal

System elements

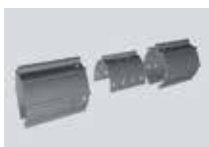
sTUB



sRRRS-X



sRRS



sTUB



sKEC-F



sKEC-F



sRRSS



sBUC-M



sRRDC



sRRTP



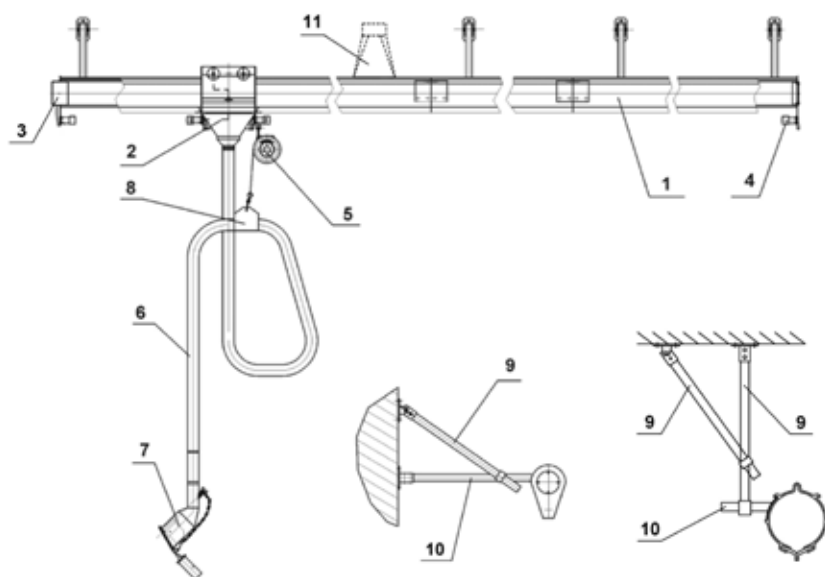
sRRZ



sBUC-F



Main components



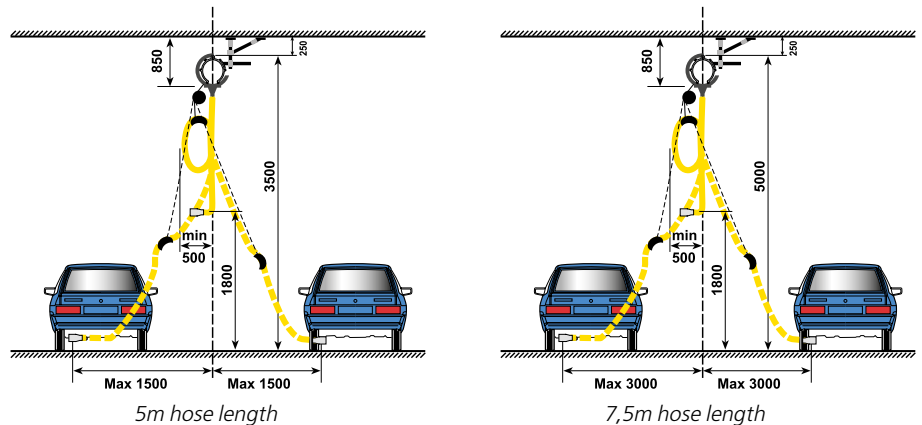
ARST

STRAIGHT RAIL SYSTEM

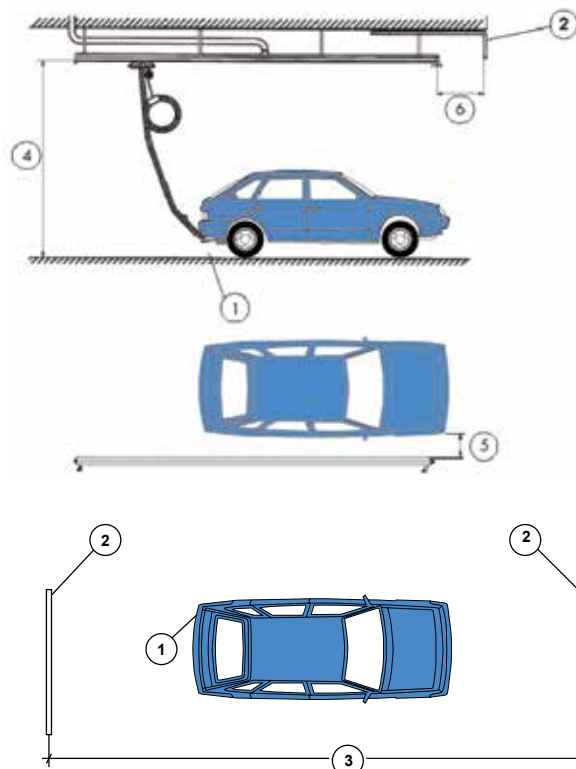
for exhaust gases removal

Requirements for installation point

Rail track installation height depends on ceiling and car heights. Rail track has to be placed on 3,5-5,0 m from the floor (to have 1-2 m free space under lifted hose), 1-1,5 m from gate and 0,5m from side of the car.



Determine car's exhaust pipe position (1), side and diameter. Measure gate's height and width (2). Check rail track height installation place. Measure distance between entrance and exit gates (3), to calculate rail track length. It is required to calculate the rail length by defining distance between entrance and exit gate minus 3,0 m.



ARL LOOP RAIL SYSTEM

for exhaust gases removal

ARL loop exhaust system is the most flexible and universal solution for removal of exhaust gases from the exhaust pipe, that allows free movement of the vehicle inside the repair shop, garage or workshop of the motor company. This system allows you to work with multiple cars one time, while carriages follow the path of the cars from entry to exit of the garage through straight line. When car is ready to leave, it is needed to disconnect the exhaust nozzle from it. Carriage then automatically returns by loop and return rail and ready to work with next arrived car.

The system should be used as part of the exhaust ventilation system with a fan, that provides the necessary air volume through each nozzle and a pressure capacity enough to compensate the resistance of the ventilation system.

Features and benefits

- ARL loop rail system - the only possible way to remove exhaust gases from a large number of cars continuously moving straight from one service sector to another
- Carriages are returned to start position by gravity by simple sliding along loop and return rail
- Modular design (13 length models)
- Light weight and easy mounting

Rail system set consists of 8 main parts:

- Rail track
- Loop track
- Return track
- Carriage
- Balancer
- Exhaust hose
- Exhaust nozzle

There are 13 standard lengths (from 5,8 to 29 m) of the straight part of the system with the distance between the axes of the rail duct and return rail of 2100 mm. Rail systems, which have a different distance between the axes of the rail duct and return rail and / or the length of the straight section, need to be ordered with additional items. Rail duct without rubber sealing is used as a return profile.

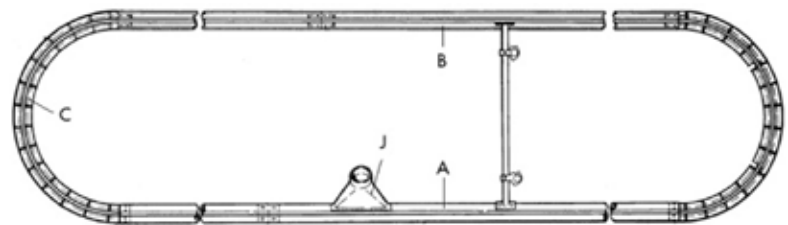


ARL LOOP RAIL SYSTEM

for exhaust gases removal

Design features

ARL rail system consists of 2 basic sections – Rail duct track (A) and return rail (B) connected to each other by loop tracks (C). Exhaust carriages follow the car along main rail track connected by hose and nozzle with car's exhaust pipes. After the car leaves the gate, carriage returns to entry gates. Rail duct track is connected with central fan by special connection piece (J). You can automatically control fan by sPCU-1000 control device with sPS-500 pressure sensors (option). For carriage returning by gravity put lower mounting point at entry and make 1-1,5 cm/m angle of return rail track up to exit point.

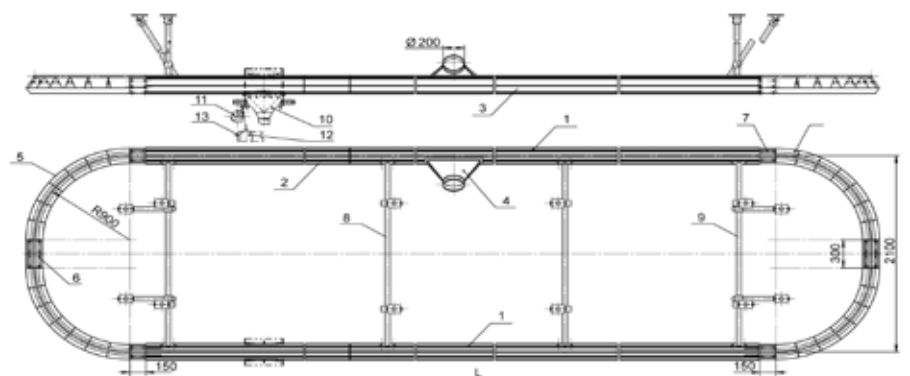


Fan connecting made by side connection piece sRRDC-200



Typical example of standart ARL mounting (all mounting elements usually included)

Main components of ARL system



ARL

LOOP RAIL SYSTEM

for exhaust gases removal

Description	Model	Loop rail exhaust systems ARL													
		L (length, m)													
		Art. N°	5430	5431	5432	5433	5434	5435	5436	5437	5438	5439	5440	5441	5442
		23.2	26.1	29	31.9	34.8	37.7	40.6	43.5	46.4	49.3	52.2	55.1	58	
Aluminium profile L=5,8m (pos.1)	sRR-5,8	8	8	10	10	12	12	14	14	16	16	18	18	20	
Aluminium profile L=2,9m (pos.1)	sRR-2,9	-	2	2	2	-	2	-	2	-	2	-	2	-	
Connection piece for aluminium profiles (pos.2)	sRRS	6	8	10	10	10	12	12	14	14	16	16	18	18	
Rubber sealing for rail duct, m (pos.3)	sRRRS-X	46,4	52,2	63,8	63,8	69,6	75,4	81,2	87	92,8	98,6	104	110	116	
Side connection socket 350x60/ 200mm, L=450mm (pos.4)	sRRDC-200	2	2	2	2	2	3	3	3	3	3	4	4	4	
Arc piece of the return rail path 90deg., radius 900mm (pos.5)	sLRS-1	4	4	4	4	4	4	4	4	4	4	4	4	4	
Steel brackets for connection of arc pieces of the return rail path (pos.6)	sLRS-3	2	2	2	2	2	2	2	2	2	2	2	2	2	
Connection piece for connection of the return path rail with aluminium profile. (pos.7)	sLRS-4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Vertical mounting kit for loop rail system (central), including: cross beam L=1930mm; double clamp SBUC-F(2pcs.); stationary support SKEC-F(2pcs.); mounting tube STUB-4; fasteners (pos.8)	sLRS-2	3	4	5	5	5	6	6	7	7	8	8	9	9	
Vertical mounting kit for loop rail system (end), including: cross beam L=1930mm; double clamp SBUC-F(2pcs.); stationary support SKEC-F(2pcs.); double turning clamp SBUC-M(2pcs.); turning support SKEC-M(2pcs.); mounting tube STUB-4(3pcs.); fasteners (pos.9)		2	2	2	2	2	2	2	2	2	2	2	2	2	

System elements

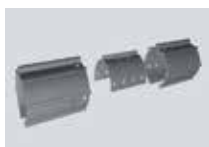
sRR



sRRRS-X



sRRS



sTUB



sKEC-F



sKEC-F



sRRSS



sBUC-M



sRRDC



sRRTP



sRRZ



sBUC-F



ENERGY SAVING **AUTOMATICS**

Automatic central fan control unit sPCU-1000

Automatic control unit is used to control the fan of the central ventilation system. Unit is used in combination with automatic dampers ASE-12. The unit automatically turns on/off the central (ducted) fan when it receives a signal from the pressure sensor or automatic valve. It allows only the exhaust air removal, energy saving and reduction of background noise. The device can be controlled manually. Fan's after run time for residual smoke extraction is set manually in the range from 7 sec. to 6 min.

Technical characteristics

- Input voltage is 3 phase/380V, frequency 50Hz.
- Contact voltage for the pressure sensor sPS-500 and dampers sPAD: 10-12V DC.
- Output voltage for the power valves 1/220V can be supplied directly from sPCU-1000.
- Output voltage for fan supply 1/200V or 3/380V. Up to 10 automatic dampers sPAD or sensor sPS-500 can be connected.
- The pressure sensor sPS-500 can respond to a pressure differential in the range from 25Pa to 200Pa. Contact voltage of 10-12V DC. The diameter of the inlet is 1/8 inch. Operating temperature from -40°C to 120°C. The material is polyester.
- The device can be controlled manually by using the remote switch.

Note.

You have to use the fuse of the right type suitable for fan motor overload.

Additional accessories.

Pressure sensor sPS-500.



ENERGY SAVING **AUTOMATICS**

Operation of energy saving automatics

In automatic mode, the signal to turn on the extraction fan comes to sPCU-1000 unit from the pressure sensor sPS-1500. The sensor reacts on pressure rise in the exhaust system when the vehicle engine is started. The sensitivity of the pressure sensor can be adjusted for any type of car engine by turning the adjusting switch. When the vehicle engine is started, the pressure sensor gets triggered and generates a signal to open the automatic valve and to turn on the fan. When the car engine is turned off, the pressure in the exhaust system decreases and the signal from the pressure sensor gets lost. Then, with a certain delay sensor automatically closes the damper and turns off the exhaust fan. Extraction fan after run time adjusts in the range from 7 sec. up to 6 min. When the controls are manual mode the extraction fan runs continuously. Control unit also has a button that turns off the extraction fan.



Pressure sensors sPS-1500 and sPS-500

Pressure sensor reacts on pressure changes when exhaust device is connected to the car exhaust pipe and car engine is on. Sensor has adjustable controls, which can help to choose optimal time for turn it on, depending on the current system and type of the car. Sensors are used with central fan control units sPCU-1000.

Pressure sensors are mounted in airduct (before sPAD dampers) which connects exhaust system or exhaust unit with extraction fan.

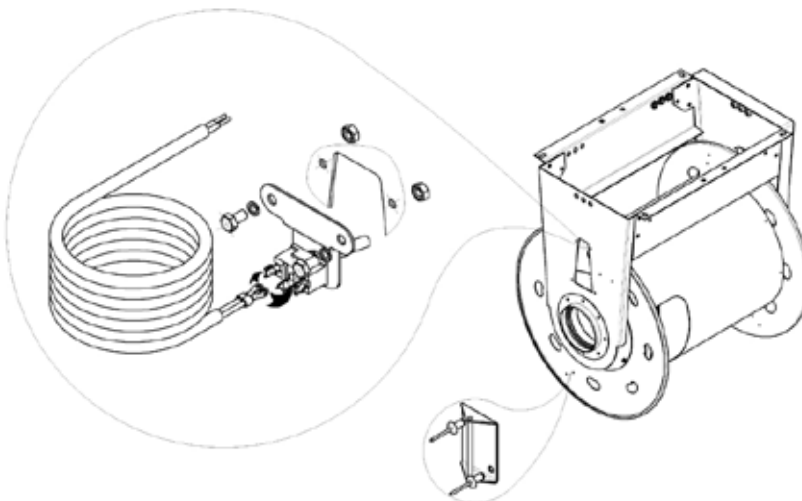
Technical characteristics

Art. N°	Model	Pressure	Sensor accuracy in low pressure zone	Sensor accuracy in high pressure zone	Contacts electrical power. Resistive load	Contacts electrical power. Inductive load
98058	sPS500	30...500 Pa	±5 Pa	±30 Pa	3A / 250VAC	2A / 250VAC
98059	sPS1500	100...1500 Pa	±10 Pa	±50 Pa	3A / 250VAC	2A / 250VAC

sMSR microswitch for fan control

sMSR microswitch is used for remote fan start/stop of ARS and ARM hose reels. It is used together with control unit sPCU-1000 or hose reel fan control unit sPUF.

ENERGY SAVING **AUTOMATICS**



Fan control unit sPCU-1000

Automatic device for controlling the central fan, which is connected to multiple extraction units or systems. It can be used for both manual and automatic start/stop of the fan. In case of automatic operation, it works along with the automatic damper sPAD, pressure sensors sPS-1500 or sPS-500 or micro switches sMSR. Additionally, you must order the thermal relay, suitable for the fan being used.

sPCU-1000 technical characteristics:

Voltage: 24 VAC/3 ph/380V

Power consumption: max 35 W

Activated by pressure sensor signal from PS or micro switch sMSR

Work mode:

Automatic: Full automatic fan start/stop by signal from PC-500

Manual: Fan always on

Stop mode - manual fan turn off

Reel's fan control unit sPUF

sMSR microswitch and sPUF unit control fans of stand-alone hose reels, connected to central systems. Microswitch is mounted on reel case and when serviceman pull down the hose the sMSR closes fan electric circuit. It is made through sPUF which has magnetic starter and thermal relay installed to protect fan motor from overload. Fan turns off when hose is rolled on the reel's drum. Fan can be controlled manually by pressing buttons on the control unit.

ENERGY SAVING **AUTOMATICS**

Technical characteristics

Voltage: 24 VAC/3 ph/380V/50 Hz

Max quantity of MSR/SP – 6 шт.

Dimensions: 242x266x162 mm

sPUF models with recommended fans

Model	Fan	Motor, kW, W	Thermal relay, A
sPUF -1800	VMK-1800	0,55; 3ph 380 V	1,1 – 1,4
sPUF -2100	VMK-2100	0,75; 3ph 380 V	1,7 – 2,3
sPUF -3000/ Fp-2500	VMK-3000 VMK-p2500	1,1; 3ph 380 V	2,7 – 3,7
sPUF -p3400	VMK-p3400	1,5; 3ph 380 V	3,4 – 4,6
sPUF -4700	VMK-4700	2,2; 3ph 380 V	4,2 – 5,8
sPUF -6000	VMK-6000	4,0; 3ph 380 V	7,0 – 10,0

Automatic damper sPAD

sPAD – automatic damper with electric drive. Automatic damper provides optimal airflow to the exhaust device connected to the car. sPAD has different models depending on diameter of exhaust device. sPAD damper controls ICE-LC (is additionally ordered to each damper).

Damper Open/close time is 7 sec.

Technical characteristics

1. Electric drive torque, Nm	8
2. AC frequency 50Hz, V	24
3. Damper rotation time, sec	8
4. Power consumption, W	
- rotation	8
- end position	0,4
- rated power	13
5. Damper rotation angle	0-90°
6. Noise level, at approx. 1m distance, dB(A)	50
7. Lifetime, cycles	60000

ENERGY SAVING **AUTOMATICS**

Models

Art. N°	Model	Torque, Nm	Weight, kg
6770	sPAD-100	1,0	1,7
6771	sPAD-125	1,0	1,9
6772	sPAD -160	1,0	2,1
6773	sPAD -200	1,0	2,5
6774	sPAD -250	1,5	2,9
6775	sPAD -315	2,0	3,5
6776	sPAD -400	2,0	4,3

Automatic damper control unit sICE-LC

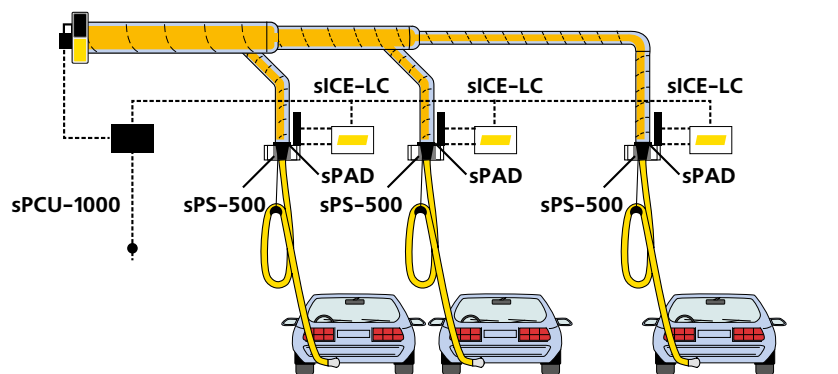
sICE-LC control panel controls damper electromotor according to signals from sPS pressure sensor. sICE-LC has pre-setup damper close delay time – 15 sec. sICE-LC provides full automatic damper control, therefore changing ventilation system capacity. it is used with ARST and ARSL rail systems, hose reels etc.

Technical characteristics

Model	ICE-LC
Protection class	IP66 (EN 60529) / UL94-V2
Ambient temperature	Max. 40°C /105°F Min. 0°C / 32°
Voltage	200-240 VAC
Safety fuse	0.5 A
Fan on/off delay	7sec – 6min
Weight	1,8kg

ENERGY SAVING **AUTOMATIC**

Typical Solutions



Workplaces equipped with exhaust unit iDrop-100-6, connected by air ducts. The ventilation system works with VMK-2100 fan. Exhaust air is removed outside the service station. Automatic control unit sPCU-1000 controls operations and power savings. Pressure sensors sPS-500 are mounted with exhaust unit's mounting flanges.

Airflow and heat saving are automatically controlled by sPAD dampers. When one of the units starts to receive the exhaust gases, the sPS-500 sensor is triggered and then turns on automatic damper which starts central system fan. The exhaust damper devices are closed before beginning any work on the vehicle, preventing unnecessary venting. After the work is completed, the valve automatically closes and the fan switches off.

EXHAUST SYSTEM'S **CALCULATION RECOMMENDATIONS**

The offered range of equipment for removal of exhaust gases allows to find an optimal solution for any workplace.



Exhaust units with individual fans for each workplace are used when installing one system of airducts is difficult. For example when workplaces are far from each other. It requires minimal calculations and installation works. If it's necessary, it is easy to dismantle equipment and move to a new location.

ADVICE №2

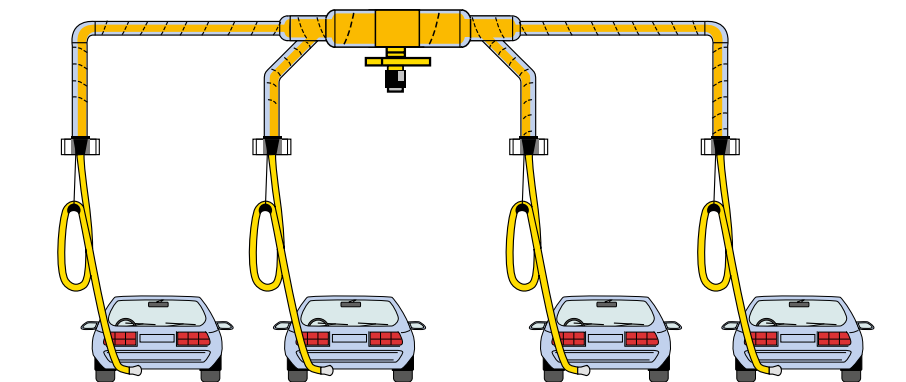
If You want a cost-effective solution for large number of workplaces, You need to connect all exhaust units with a system of air ducts connected to a central exhaust fan. The fan should be with total airflow rate of all exhaust air, taking into account pressure drops in the system.

ADVICE №3

If large number of exhaust units combined in central system, You need to place the central fan in the middle of the system. This solution allows to reduce the pressure drop in the system and use the ducts of smaller diameter.

Central exhaust extraction system

Several workplaces equipped with exhaust unit iDrop-100-6, which is connected by the ducts. Central fan VMK-4700 works in extraction system. Exhaust air is extracted outside. In this case, you have to use exhaust nozzles with dampers, to avoid unnecessary air removal.

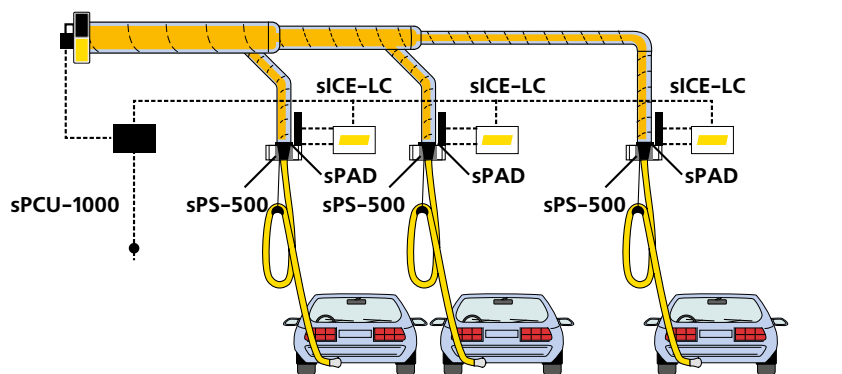


ADVICE №4

Energy-saving automatic improves efficiency of the ventilation equipment and essentially reduces the energy consumption.

EXHAUST SYSTEM'S CALCULATION RECOMMENDATIONS

Central ventilation system with extraction units



Exhaust air extracts outside.
Automatic control unit sPCU-1000 controls operations and power savings.

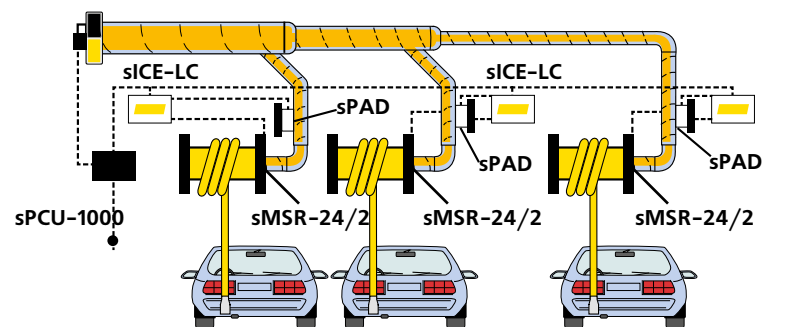
Airflow and heat saving are automatically controlled by sPAD dampers.

Several workplaces equipped with exhaust unit iDrop-100-6 connected by air ducts. Central fan VMK-4700 works in extraction system.

Pressure sensors sPS-500 are mounted with exhaust unit's mounting flanges.

Centralized automatic control system with exhaust reels

Picture below shows the centralized system of exhaust gas removal, consisting of 3 mechanical exhaust reels series ARS with a central exhaust fan. System operates by automatic control unit sPCU-1000 connected to the automatic damper sPS and central fan. When one of the reels starts to work (exhaust hose reel), the micro switch MSR-24/2, which sends a signal to open the automatic valve. Valve of the other exhaust unit is closed before beginning any work on the vehicle, preventing unnecessary venting.



When work is finished (the hose is rolled up), the valve automatically closes and the fan switches off

Vehicle Exhaust Extraction System

WHAT IS THE PRESSURE DROP?

The rate of air movement in this system defined by resistance to airflow in the ventilation system. If speed is increasing, resistance is also increasing. That is, what we call the pressure drop. Static pressure generated by the fan causes air movement in the ventilation system, which has some resistance. The higher the resistance of the system - the lower the airflow which fan can remove.

ONE POST APPLICATION

The simplest solution is to make extraction system with individual fans. There are a number of significant advantages if we choose such solution. Calculations and installation will not cause difficulties. Airflow of one extraction unit will not depend on the number of other operating extraction units. Equipment can be easily disassembled and moved to a new location without affecting the work of other units. Such extraction unit easily connects to the central exhaust system, and the overall operation of the system can be controlled by energy saving automatics.

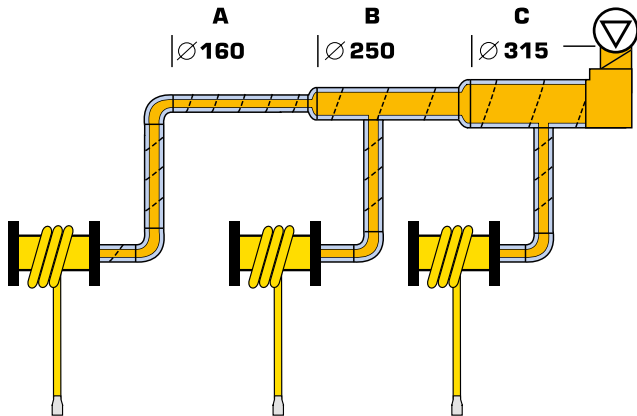
HOW TO CALCULATE CENTRALIZED VENTILATION SYSTEMS?

When air polluted with dust and smoke, you need a sufficiently high air speed to avoid sedimentation of particles on the inner walls of the ducts. Acceptable speed is about 10-15m/s. To remove exhaust gases from vehicles with engine capacity up to 100 HP it is necessary to provide the 360 m³/h airflow at least, and not less than 1080 m³/h for cars with engine capacity more than 300 HP.



ADVICE #1

If we provide similar air velocity across the ventilation system, the pressure drop in the duct system can be reduced by increasing the diameter of the duct. On the picture below, we can see how to provide similar air velocity in the duct system with minimum pressure drop. The volume of extracted air from one extraction unit is equal $540 \text{ m}^3/\text{h}$ for vehicles with a capacity up to 150 hp.



The section (A) air volume is $540 \text{ m}^3/\text{h}$
if velocity in this section is 13 m/s

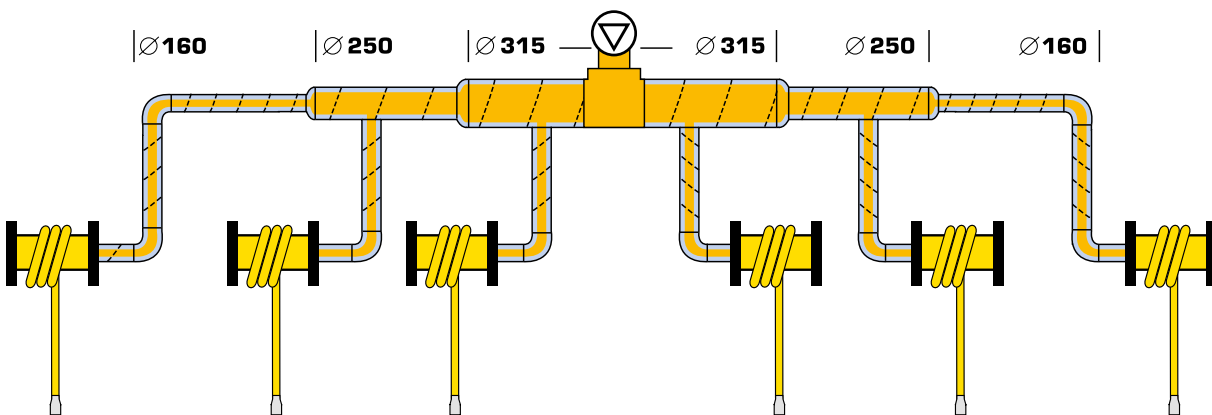
The section (B) air volume is $1080 \text{ m}^3/\text{h}$
if velocity in this section of 15 m/s

The section (C) air volume is $1620 \text{ m}^3/\text{h}$
if velocity in this section of 13 m/s



ADVICE №2

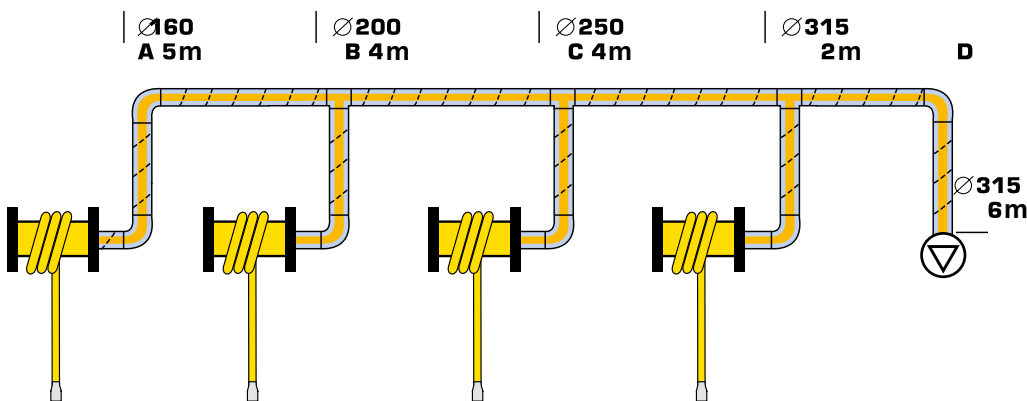
We recommend to place a fan in the middle of the ventilation system, if You want to combine a large number of extraction units. This solution has several advantages - the pressure drop reduces, and ducts of smaller diameter can be used.



EXAMPLE #1

For example, we have four service lots in the car station, in which ventilation system is needed. To remove the exhaust from trucks with the horsepower up to 250 HP, we will use exhaust reels ARS-125-10 with manual roll up / roll down of exhaust hose. We will provide reels with heat-resistant exhaust hoses with 125 mm diameter and 10 m length with the 150 mm steel nozzles.

The calculation will start by making a sketch of the system with indicating the locations of exhaust systems, central fan and lengths of duct sections between them. Then we need to calculate the airflow through each section of the system. We know that the airflow through each nozzle hood is $840 \text{ m}^3/\text{h}$ and calculate the pressure drop and the duct diameters for each of the straight sections (A), (B), (C) and (D).



Let's calculate the pressure drop for sections (A), (B), (C) and (D):

- **SECTION A**, using the pressure drop in round ducts diagram, we can calculate the required diameter of the duct and the pressure drop in it. It is necessary to ensure that the speed of air in about 10-15 m/s, with recommended airflow $840 \text{ m}^3/\text{h}$. **A: $840 \text{ m}^3/\text{h}$, inlet diameter 160 mm, speed 11 m/s, the pressure drop $8 \text{ Pa} \times 5 = 40 \text{ Pa}$**

- **SECTION B**, repeat the same calculations, not forgetting that the air flow through this segment will be $1680 \text{ m}^3/\text{h}$. **B: $1680 \text{ m}^3/\text{h}$, inlet diameter 200 mm, speed 13 m/s, the pressure drop $7 \text{ Pa} \times 4 = 28 \text{ Pa}$**

- **SECTION C**, repeat the same calculations, not forgetting that the air flow through this segment will be $2520 \text{ m}^3/\text{h}$. **C: $2520 \text{ m}^3/\text{h}$, inlet diameter 250 mm, speed 13 m/s, the pressure drop $8 \text{ Pa} \times 4 = 32 \text{ Pa}$**

- **SECTION D**, repeat the same calculations, not forgetting that the air flow through this segment will be $3360 \text{ m}^3/\text{h}$. **D: $3360 \text{ m}^3/\text{h}$, inlet diameter 315 mm, speed 12 m/s, the pressure drop $4 \text{ Pa} \times (2+6) = 32 \text{ Pa}$.**

2. When the calculation of pressure drops in straight sections is completed, it is necessary to calculate the pressure drop in all elements (pipe bends, reducers, switches, T-bends) In our case there are 6 bends at 90° , 3 switches and 3 T-bends, total pressure loss is 568 Pa.

3. Now we need to sum up the pressure drop in all elements and in the most remote from the fan exhaust unit, a pressure drop equals to 900Pa with air consumption of 840 m³/h.

In total we get 132 Pa + 568 Pa + 900 Pa = 1600 Pa

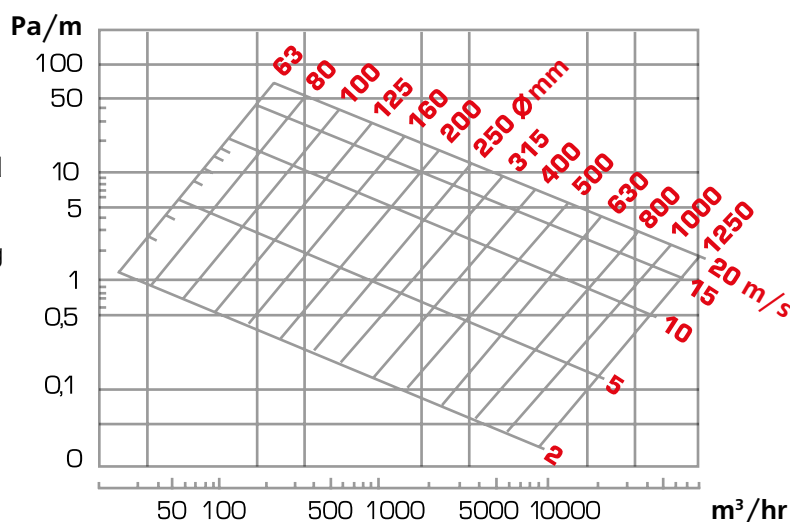
After calculating the system with the same speed along its entire length, we need a fan that removes up to 3500 m³/h of air, the resistance of the system is 1600 Pa. According to these calculations and mounting and operation requirements of the system we need fan VMK-4700.

Pressure drop in round ducts

DIAGRAM 1

The diagram help to choose duct's optimal diameter and calculate the amounts of pressure drops, (duct length is 1 m), using the recommended values of airflow rate and the speed of its movement. Firstly, we need to calculate parameters of the duct - moving 4000 m³/h of air and maintaining its velocity within 10-15 m/s.

We need to find on the lower scale (data expressed in m³/h) 4000 mark and connect it with the point on the line of the duct's diameter, which is between 10 and 15 m/s.



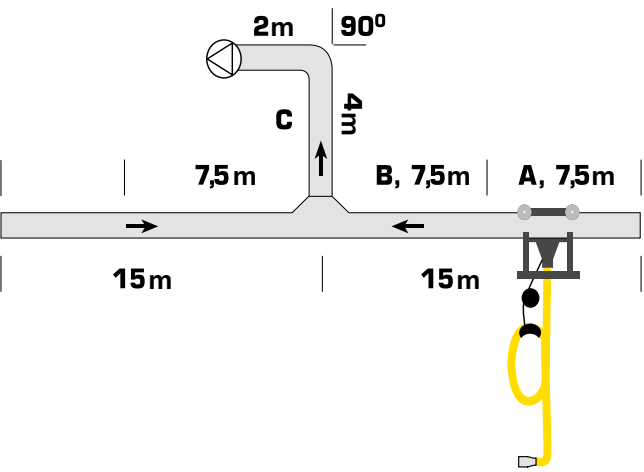
This point is located on the duct with diameter 315 mm, the speed of air movement in this point will be approximately 13 m/s. This point comply with 5PA Y-axis which show pressure drop within 1 m of duct. If the length of the section is 5 m, the total pressure drop in the duct will be 5 Pa x 5 = 25 Pa.

EXAMPLE #2

How to calculate straight rail system?

The calculation starts with making a sketch of the system with pointing the location of the exhaust fan, as well as the lengths of the sections of the rail-duct and the connecting duct, then define the airflow through each section of the system.

For example we need to remove exhaust air at 360 m³/h from a car with horsepower up to 150 HP and calculate the pressure drop for each of the sections (A), (B) and (C), then determine pressure drop in the carriage with selected exhaust hose (diameter 100 mm, length 5 m) and the amount of bypass air in the system.



1. Using diagram pressure drops in the carriage with exhaust hose (diagram 1), knowing diameter of the exhaust hose 100mm and we need to ensure airflow in 360 m³/h. Pressure drop is equal to 641 Pa.

2. Now we need to calculate value of air inleakage between nozzle of carriage and rubber seal of rail-duct, using diagram 2. This value will be 137 m³/h.

3. Now let's calculate the value of air inleakage between the rail rubber seals using the diagram 3. This value is equal to 2,9 m³/h x 15 m = 43,5 m³/h.

4. Calculating the pressure drop on following sections:

- **SECTION A**, using the diagram 4 (pressure drop in round steel duct), we need to calculate pressure drop at flow 360 m³/h+137 m³/h=497 m³/h

A: the airflow is 497 m³/h, the inner diameter of the rail-duct is 160 mm, pressure drop 3 Pa x 7,5 m=22,5 Pa

- **SECTION B**, repeat the same calculations, keeping in mind that the air flow through this segment will be 497 m³/h+43,5 m³/h=540,5 m³/h.

B: the airflow is 540,5 m³/h, pressure drop 3,8 Pa x 7,5 m = 28,5 Pa

- **SECTION C**, repeat the same calculations, the air flow through this segment will be 540,5 m³/h+43,5 m³/h=584 m³/h, diameter of duct 200 mm.

C: the airflow is 584 m³/h, pressure drop 1,5 Pa x (4+2) m=9 Pa

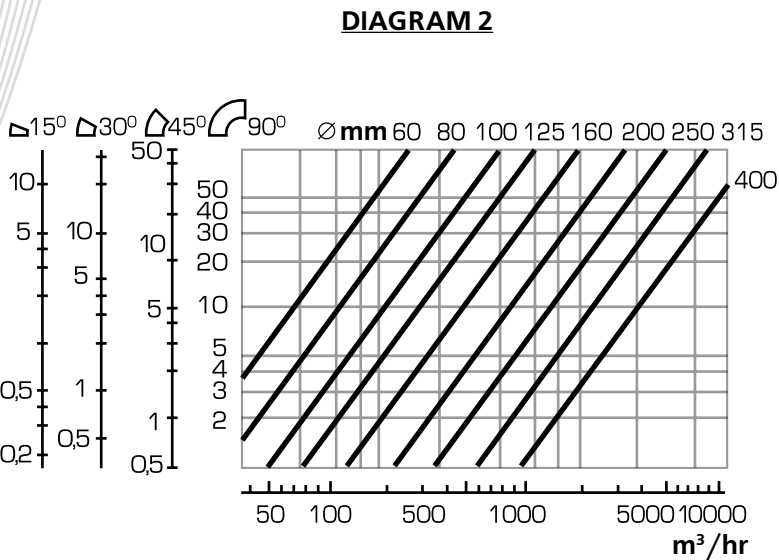
5. When calculating of last section is completed, it is necessary to calculate the pressure drop in pipe bends which have the same diameter as the straight ducts in these sections. In our case we have pipe bend with 90° and 200mm diameter. The pressure drop can be calculated in round bends pressure drop diagram which is equal to 6Pa with airflow 584 m³/h.

6. Now sum up all calculated pressure drop values, 641 Pa (carriage with exhaust hose)+22,5 Pa (section A)+28,5 Pa (section B)+9 Pa (section C)+6 Pa (bend 900)=707,4 Pa. The received value is 707,4 Pa.

Finally, we have calculated the system and identified that we need a fan that removes up to 584 m³/h of air, with the resistance of the system - 707,4 Pa. According to these calculations and mounting and operation requirements of the system we need fan VMK-2100.

Pressure drop in round bends

Diagram helps to figure out the pressure drop in the outlet, which depends on the bending angle, diameter and airflow rate. To calculate pressure drop for 90° bend with 315 mm diameter, at airflow of 3000 m³/h we need to find the crossing of the vertical line (3000 m³/h) and inclined line (315 mm). After that we need to find the pressure drop at left side where 90° bend vertical line mentioned. Now the pressure drop is known, it is approximately 17 Pa.

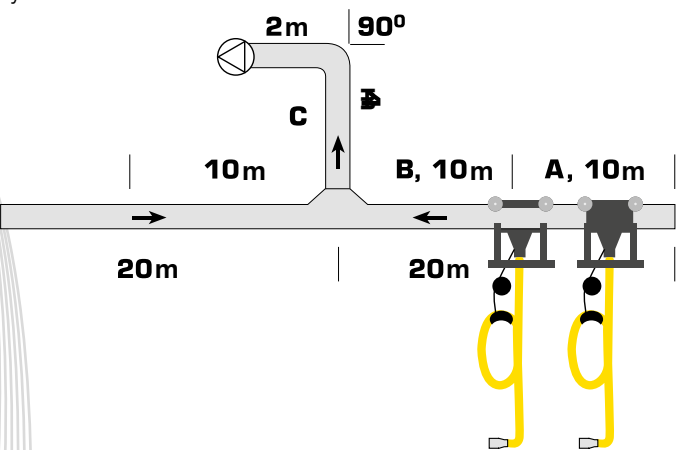


EXAMPLE #3

How to calculate loop rail system?

The calculation starts with a sketch of the system that shows the location of the exhaust fan, as well as the lengths of the sections of the rail-duct and the connecting duct, it is also important to define the airflow through each section of the network.

For example we need to extract exhaust air at 360 m³/h from a car with horsepower up to 150 HP and calculate the pressure drop for each of sections (A), (B) and (C), then determine pressure drop in the carriage with selected exhaust hose (diameter 100 mm, length 5 m) and the amount of bypass air in the system.



1. According to the diagram pressure drop in the carriage with exhaust hose (diagram 1), we can calculate this drop by using diameter of the exhaust hose 100 mm and airflow at 360 m³/h. Pressure drop is 641 Pa.
2. Now we need to figure out the amount of the air leakage between nozzle of carriage and rubber seal of rail-duct, using the diagram 2. Inleakage is about 137 m³/h.

3. Now let's calculate the amount of air inleakage between the rail rubber seals using the diagram 3. This inleakage is 2,9 m³/h x 20 m = 58 m³/h.
4. Next step – calculating air inleakage at the junction of rail-duct and a return rail using diagram This inleakage is 106 m³/h.

5. Calculating the pressure drop on following sections (A), (B) and (C):

- **SECTION A**, using the diagram «pressure drop in round steel ducting», determine pressure drop at flow $2 \times 360 \text{ m}^3/\text{h} + 2 \times 137 \text{ m}^3/\text{h} + 106 \text{ m}^3/\text{h} = 1100 \text{ m}^3/\text{h}$

A: the airflow is $1100 \text{ m}^3/\text{h}$, the inner diameter of the rail-duct is 160 mm, pressure drop $11 \text{ Pa} \times 10 \text{ m} = 110 \text{ Pa}$

- **SECTION B**, repeat the same calculations, remembered that the air flow through this segment will be $1100 \text{ m}^3/\text{h} + 58 \text{ m}^3/\text{h} = 1158 \text{ m}^3/\text{h}$

B: the airflow is $1158 \text{ m}^3/\text{h}$, pressure drop $13 \text{ Pa} \times 10 \text{ m} = 130 \text{ Pa}$

- **SECTION C**, repeat the same calculations, remembered that the air flow through this segment will be $1158 \text{ m}^3/\text{h} + 58 \text{ m}^3/\text{h} + 106 \text{ m}^3/\text{h} = 1322 \text{ m}^3/\text{h}$, diameter of duct 200 mm

C: the airflow is $1322 \text{ m}^3/\text{h}$, pressure drop $5 \text{ Pa} \times (4+2) \text{ m} = 30 \text{ Pa}$

6. When calculation of the last section completed, it is necessary to calculate the pressure drop in pipe bends which have the same diameter as the straight ducts in these sections. In our case we have pipe bend with 90° with a diameter of 200 mm. The pressure drop can be calculated in round bends pressure drop diagram and is equal to 20 Pa at airflow $1322 \text{ m}^3/\text{h}$.

7. Now sum up all of the calculated pressure drop figures 641 Pa (carriage with exhaust hose) + 110 Pa (section A) + 130 Pa (section B) + 30 Pa (section C) + 20 Pa (bend 90°) = 931 Pa . The total pressure drop is 931 Pa .

Finally, we have calculated the system and identify that we need a fan that extracts up to $1322 \text{ m}^3/\text{h}$ of air, with the total resistance of the network - 931 Pa .

Considering the advantages of the universal mounting and operation requirements of the system characteristics we can choose fan VMK-2100.

Pressure drop in the carriage with exhaust hose

If the diameter of the hose and airflow are known, diagram helps to figure out the pressure drop in the carriage with 5 m exhaust hose. If the length of hose is more than 5 m, we need to consider additional pressure drop in hoses for each meter.

- A) the carriage with the hose 75 mm.
- B) the carriage with the hose 100 mm.
- C) the carriage with the hose 125 mm.
- D) the carriage with the hose 150 mm.

DIAGRAM 3

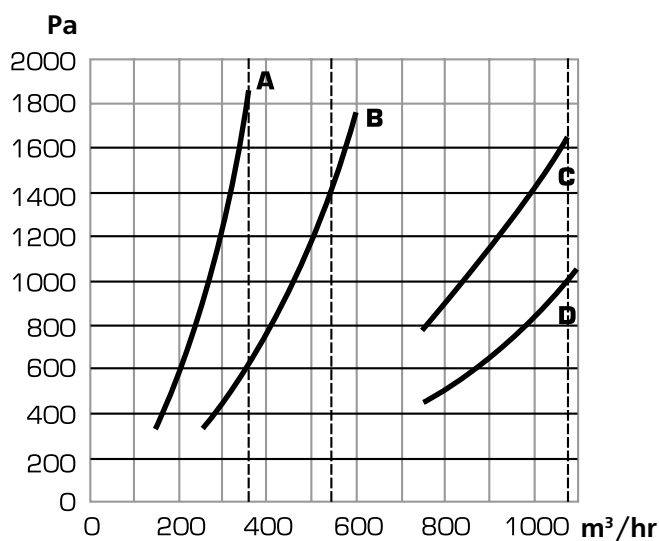


DIAGRAM 4

Air leakage between carriage's nozzle and rubber seal of rail-duct

If the pressure drop in the carriage with exhaust hose is known, the diagram will help to figure out the amount of air leakage between carriage's nozzle and rubber seal of rail-duct. If the pressure loss is 500 Pa, then the amount of suction will be 125 m³/h.

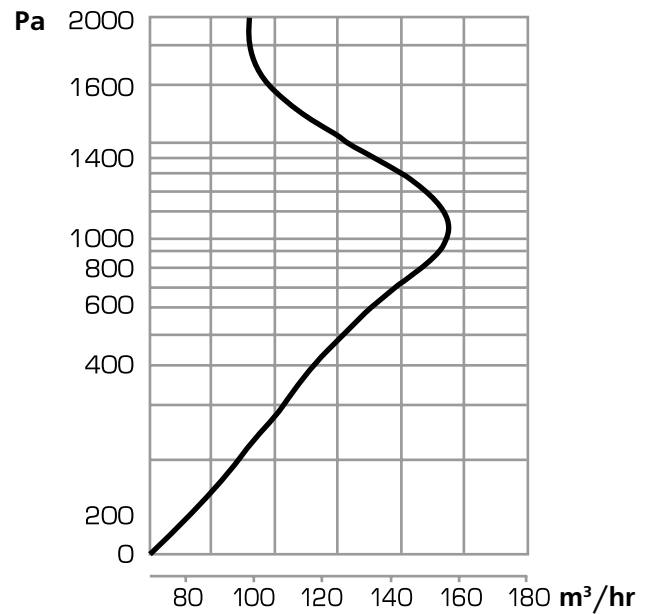
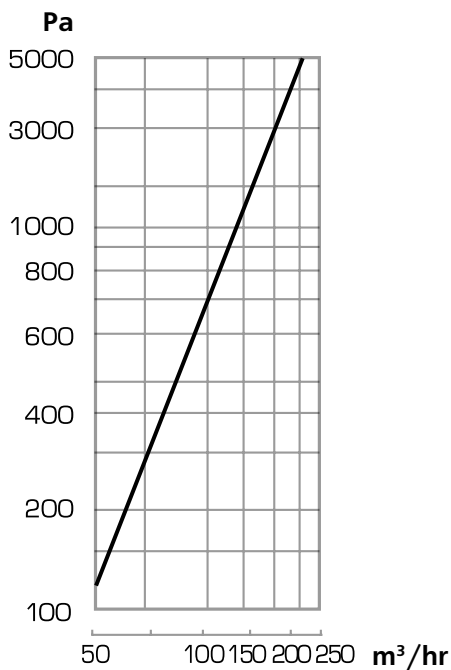
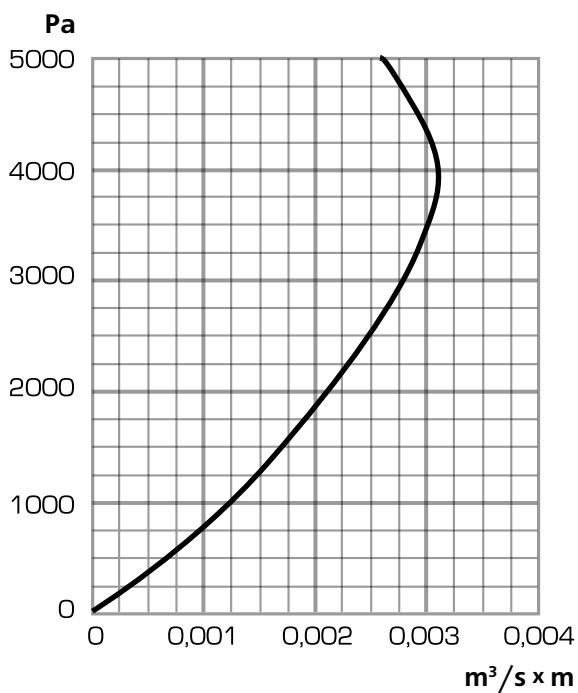


DIAGRAM 5

Air leakage between the rail rubber seals of rail-duct

If the pressure drop in the carriage with exhaust hose is known, the diagram will help to figure out the amount of air leakage between the rail rubber seals. So, if the pressure loss is 500 Pa, the amount of suction will be 2,25 m³/h for 1 m of the rail. If the rail length 20 m, the leakage will be equal to 2,25 m³/h x 20 m = 45 m³/h.

DIAGRAM 6

Air leakage between the rail rubber seals of rail-duct

If the pressure drop in the carriage with exhaust hose is known, the diagram will help to figure out the amount of air leakage between the rail rubber seals. So, if the pressure loss is 500 Pa, the amount of suction will be 2,25 m³/h for 1 m of the rail. If the rail length 20 m, the leakage will be equal to 2,25 m³/h x 20 m = 45 m³/h.

The Source Data

FOR CALCULATING THE VENTILATION SYSTEMS



HOW TO CHOOSE EXTRACTION DEVICE

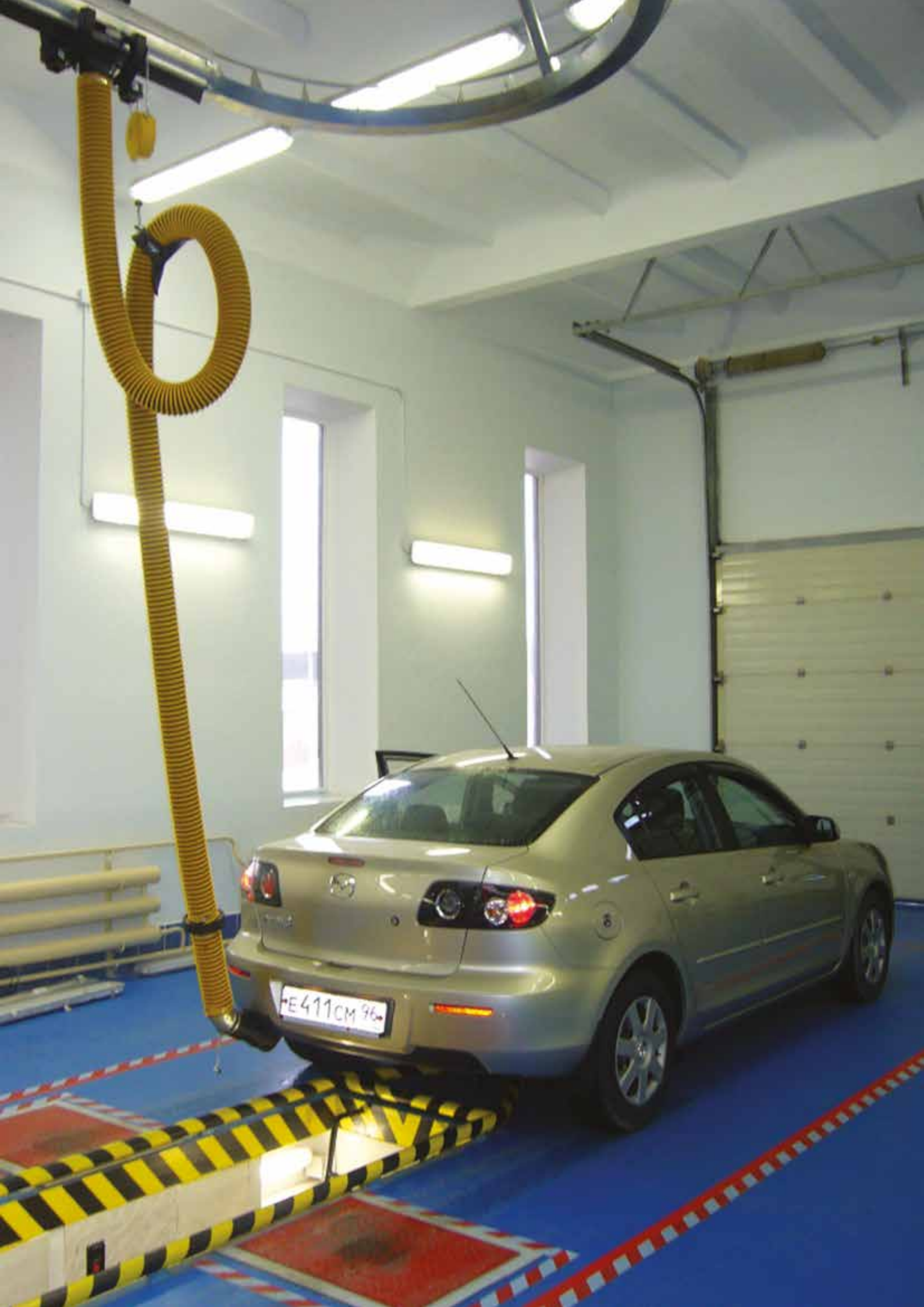
Type of vehicle	Power of the engine (HP)	Airflow recommended for extraction device	Diameter of hose (mm)
Motorbikes and cars	Up to 120	250-350	75-100
Cars, minibuses, light trucks	120-180	350-500	100-125
Buses and trucks	180-240	500-650	125-150
Trucks	240-300	650-800	150
Trucks	More than 300	800-1080	150

VEHICLE EXHAUST SYSTEMS

Selection of the systems

Characteristics of location		Characteristics of the cars	
Plan of location		Type of the facility	Quantity of cars in the room
1m			
		Car repairshop	Power of the engine, HP/ Volume of cylinders, L
		Service station	Type of engine (gasoline/ diesel)
		Diagnostic center	Dimensions of the car, LxWxH, mm
		Covered parking	Position of exhaust pipe
		Bus park	Height from ground to exhaust pipe, m
		Car factory	Diameter of exhaust pipe, mm
		Fire	Temperature of exhaust fumes, C°
		Department	
		EMERCOM	

Indicate on the diagram:
the number of vehicles, placement, route, moving and stationary vehicles with working and stopped engines
the room:
walls, columns, entrance/exit gate, ceiling height



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