EN

USE AND MAINTENANCE MANUAL

Rail Extraction System KOS-AL; OBP/P-AL
KOS-AL; OP-AL

Contents:

Producer: **KLIMAWENT S.A.**
81-571 Gdynia, ul. Chwaszczyńska 194
tel. 58 629 64 80, 58 771 43 40
fax 58 629 64 19
email: klimawent@klimawent.com.pl

KLIMAWENT

17.01.2019

www.klimawent.com.pl

issue: January 2019

1. INTRODUCTION

The purpose of the present Use and Maintenance Manual is to supply User with directions within the range of application, assembly, start-up and operational use of the **KOS-AL; OBP/P-AL** Rail Extraction System.

Prior to assembly at the place of operation and use, it is important to get thoroughly acquainted with the contents of the present instruction.

With regard to continuity of work carried on improvement of our products, we reserve for ourselves the revision possibility of the draft and technological changes improving their functional features and safety.

Construction of **KOS-AL; OBP/P-AL** meets the requirements of the current state of technology as well as the safety and health assurances included in:
2006/42/EC Directive of the European Parliament and of the Council of the 17 May, 2006 on machinery, amending the 95/16/EC Directive (recast) / Official Journal EC L157 of the 09.06.2006, page 24);

Additionally, it is in accordance with the subsequent harmonised standards:
EN ISO-12100:2012 Safety of machinery – General principles of design – Assessment and reduction of hazard

2. PURPOSE

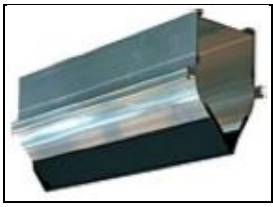
KOS-AL; OBP/P-AL rail extraction system has been engineered for extraction of vehicle exhaust extraction by means of the OBP/P-AL balancing mobile extractor (or the OP-AL mobile extractor) displacing along the suction duct. Extraction proceeds through a hose ended with a nozzle that is clamped at the exhaust pipe of the serviced vehicle. The system is designed for cars and trucks.

3. RESERVATIONS OF MANUFACTURER

- Manufacturer accepts no liability for any consequences following from the operational use that is in contradiction to the purpose of application.
- Installing of any additional elements that are not belonging to the normal device structure (or accessory set) is not acceptable.
- Do not introduce any structural or constructional modifications on the device on one's own.
- Protect the system from mechanical damage.
- Prior to installing – check the load carrying capacity of the ceiling / wall, in a place where the unit shall be installed; unsure setting of mounting bolts could result in uncontrolled device detachment, its damage and risk to the operator / people in the vicinity.
- Do not use the system for other purposes than it is specified in the range of application.

4. TECHNICAL DATA

Self-tightening suction duct
Table No.1

	Type	Segment length	Cross-section	Unit weight	Segment of the segment
		[m]	[cm^2]	[kg/m]	[kg]
	KOS-AL-2	2	290	9,7	19,4
	KOS-AL-4	4			38,8

Balancing mobile extractors
Table No.2

	Type	Hose diameter	Hose length	Recommended volume flow	Flow resistances	Thermal resistance	Application	Weight
		[mm]	[m]	[m^3/h]	[Pa]	[°C]		[kg]
	OBP/P-AL-100-6	100	6	400	1200	150[2)]	SO	35,8
	OBP/P-AL-100-6/CF					300/150[3)]		
	OBP/P-AL-125-6	125	6	700	1300	150[2)]	SD	36,7
	OBP/P-AL-125-6/CF					300/150[3)]		
	OBP/P-AL-150-6	150	6	1500	2000	150[2)]	SC	37,6
	OBP/P-AL-150-6/CF					300/150[3)]		

CAUTION:
1. upon selection of the extractor size – contact KLIMAWENT S.A.
2. exhaust hose of thermal resistance 150°C (for a short time 200°C)
3. first hose section of 2 metres length (near the nozzle) – thermal resistance 300°C (for a short time 350°C) further hose section – as in Clause **2.** above
4. **SO** – cars; **SD** – medium size vehicles; **SC** – trucks

Mobile extractors (are not equipped with balancers) – the hose should be deposited manually on a hanger; lengths of the hose are not limited

Table No.3

	Type	Hose diameter	Hose length	Recommended volume flow	Flow resistances	Thermal resistance	Application	Weight
		[mm]	[m]	[m³/h]	[Pa]	[°C]		[kg]
	OBP/P-AL-100-6	100	6	400	1200	150[2)]	SO	11,8
	OBP/P-AL-100-6/CF					300/150[3)]		
	OBP/P-AL-125-6	125	6	700	1300	150[2)]	SD	12,7
	OBP/P-AL-125-6/CF					300/150[3)]		
	OBP/P-AL-150-6	150	6	1500	2000	150[2)]	SC	13,6
	OBP/P-AL-150-6/CF					300/150[3)]		

CAUTION:

1. upon selection of the extractor size – contact KLIMAWENT S.A.
2. exhaust hose of thermal resistance 150°C (for a short time 200°C)
3. first hose section of 2 metres length (near the nozzle) – thermal resistance 300°C (for a short time 350°C) further hose section – as in Clause **2.** above
4. **SO** – cars; **SD** – medium size vehicles; **SC** – trucks

5. STRUCTURE AND FUNCTION

KOS-AL duct is constructed of aluminium segments of lengths 2 or 4 metres, assembled together to obtain the requested total length. Along the duct displaces the extractor trolley with balancer and the hose (ended with a nozzle that has to be connected at the exhaust pipe of the serviced vehicle. The trolley is equipped with a shut-off damper that opens and closes while the hose is lowered and lifted. Therefore a smaller extraction fan can be applied – when one suction duct cooperates with more than one extractor, and the coincidence coefficient of their use is lower than 1.

A sliding duct fitting piece displaces between two rubber aprons which are sealed up by vacuum produced in the duct by an extraction fan. The extractor is equipped with a balancer providing easy pulling / lifting of the hose, whereby the ratchet gear locks the hose at the requested operational position.

In case of application of a self-disconnecting nozzle – at the end of the suction duct – operates the self-release mechanism. After that, the hose with the nozzle are lifted to their home position.

Application with a non-self-disconnection nozzle – the nozzle should be released manually. Simply, the hose should be pulled gently to operate the lifting balancer.

Stoppers at the ends of the suction duct limit the displacement of the mobile extractor in its limit positions.

It is recommended to install the extraction system in a height of 3 up to 4 metres above floor. Discharge conduits can be connected to each end of the KOS-AL suction duct, as well as at its upper surface.

KOS-AL duct and OBP/P-AL extractor with a hose of diameter 100 mm are designed for cars; diameter 125 for medium-size vehicles; diameter 150 mm – for trucks.

Selection of the hose is depended on the cubic capacity of the vehicle engine and its rotational speed. In case of a more precise implementation, please contact KLIMAWENT S.A.

As option, are available radio control units – to provide automatic fan start at the moment when the hose is lowered / pulled at the nozzle. After the work is completed, the fan will disconnect itself upon time delay.

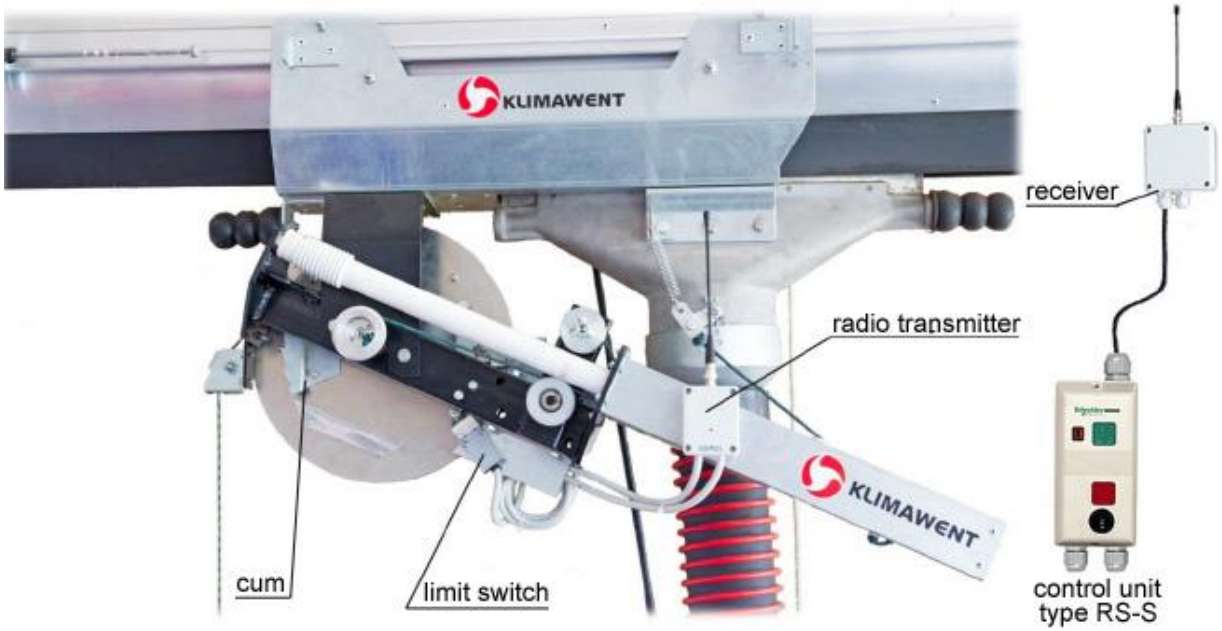


Photo No.1 – Radio control of the fan function

As standard applications, are suggested extractors equipped with hoses of thermal resistance 150°C (for a short time 200°C). For vehicles with Diesel engine (equipped with a solid particles absorber – Euro 5, Euro 6) due to high temperature of the exhaust volume, we suggest application extractors with hoses of higher thermal resistance (OBP-AL/CF).

5.1 KOS-AL – elements

a. duct segment **KOS-AL**
b. segment joint **KSG**
c. end closing plate **PZC**
d. terminal stopper **STK**
e. duct hangers:
– "**Z**" – ceiling hanger
– "**L**" – wall hanger
f. connection fitting piece **KTSU-200**
g. rubber aprons

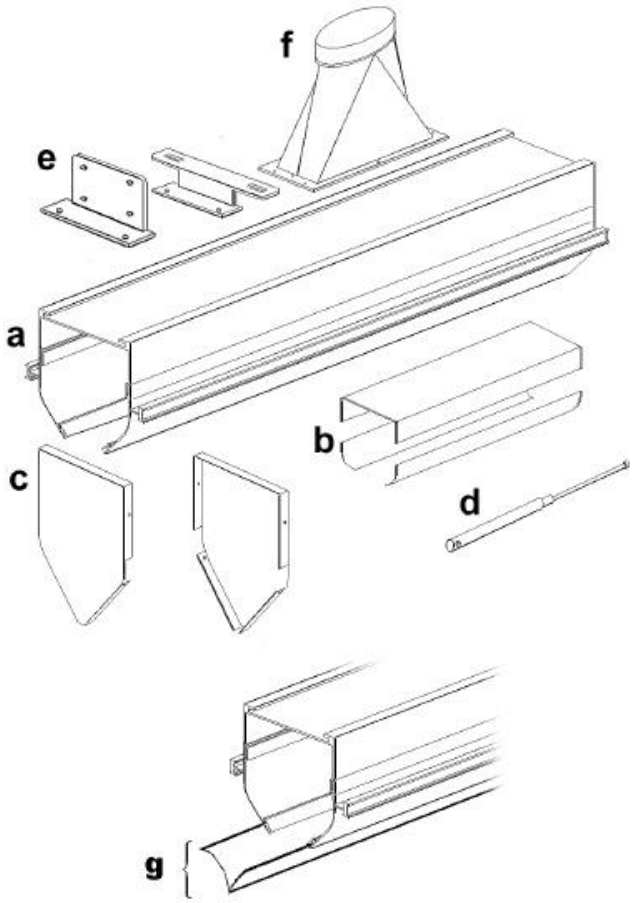


Fig. No.2

5.2 Suction duct with return rail

Return rail and the special construction of the trolleys provide a simultaneous and constant possibility of extraction from several vehicles displacing in a row – from garage entrance up to the exit.
At the moment when the vehicle leaves the garage, the nozzle self-disconnection mechanism releases the nozzle, whereby the free extractor trolley rests on the arc rail. From there it can be guided back on the return rail and is ready to be connected to the next vehicle.

We offer this solution on separate order.

Fig. No.3

5.3 Specification of nozzles for exhaust extractors
Table No.4

Sort of the extractor	Type	Connection diameter [mm]	Inlet dimension [mm]	Weight [kg]	Remarks
	SZGO-125 SZGO-150	125 150	150 170	2,5 3,2	round rubber nozzle with lever clamp for manual disconnection
	SZGP-100 SZGP-125	100 125	180 x 100	2,1 3,2	oval rubber nozzle with lever clamp for manual disconnection
	SZGO-125/B SZGO-150/B	125 150	150 170	2,5 3,2	round rubber nozzle with lever clamp and Bowden cable for automatic disconnection
	SZGP-100/B SZGP-125/B	100 125	180 x 100	2,1 3,2	oval rubber nozzle with lever clamp and Bowden cable for automatic disconnection
	SRGO-100 SRGP-125	100 125	180 x 100	2,4	oval rubber nozzle for built-in and covered exhaust pipes, for manual disconnection, (the clamp is inside the exhaust pipe)

On demand we offer adaptation of the set of nozzles for double exhaust pipes

5.4 Extraction fan – depending on the type – it can be installed on the roof on a roof pedestal or roof base or on a wall bracket inside the building

For selection of the fans – series WPA-E or WPA-D – see KLIMAWENT S.A. catalogue, Section FANS
Before selection contact KLIMAWENT.S.A.

Cross-section and length of the ventilation ducts – as foreseen for connection to the fan outlet: it is important that the minimum volume flow (at the suction terminal) is not less than the value specified in Table "Technical Data".

6. ASSEMBLY AND STARTUP

As there are strict requirements on the precision of the system installing – this should be performed by the authorised assembly team of manufacturer. It is recommended to install the system in a height 4,3 metres measured from the upper surface of the duct, whereby the distance from the building wall is 0,5 m (measured from the axle of the KOS-AL suction duct). Ventilation / discharge ducts can be connected to each end of the suction duct or to its upper surface.

Start-up of the system:

- switch on the extraction fan
- guide the extractor near the exhaust pipe of the serviced vehicle
- **OBP/P-AL** – pull down the exhaust hose – to the requested operational length – until it gets blocked automatically – so it is easy to clamp the nozzle at the exhaust pipe
- **CAUTION**! **to obtain full opening of the shut-off damper – necessarily it is important to lower the suspensions of the hose** (**the suspension cord is pulled out**) **by at least 1 metre**.
- **OP-AL** – pull down the exhaust hose to the requested operational length – to provide conditions for easy clamping of the nozzle at the exhaust pipe
- connect the nozzle to the exhaust pipe by means of a lever clamp

After the completed extraction

- disconnect the nozzle from the exhaust pipe
- **OBP/P-AL** – pull gently the exhaust hose – until it gets unblocked – the hose starts lifting to its home position
- **OP-AL** – dispose the exhaust hose in a safe place
- guide the extractor trolley to home position
- switch off the extraction fan.

CAUTION! In application with a self-release nozzle – at the moment when the vehicle moves – the OBP/P-AL trolley displaces on the suction duct and operates the release mechanism of the nozzle automatically. The nozzle disconnects from the exhaust pipe, whereby the terminal stoppers limits smoothly the OBP/P-AL trolley movement at the end position on the suction duct, protecting it from damage.

7. OPERATIONAL USE

The system does not require any additional routine technical supervision after its start-up. In case when the place of application is changed – repeat the steps from Section 6 referring the assembly and adaptation of the ventilation system to new configuration. If any unusual symptoms of malfunction (not typical noise or visually) are observed – proceed as in Section 8.

8. TROUBLESHOOTING GUIDE

Table No.5

	Problem	Possible reason	Corrective action
1.	Decrease in the intake air volume	Solid element, foreign object being obstacle / barrier for the flow got stack in the suction nozzle or in the exhaust hose	Localise the obstacle object and remove it
2.	Decrease in the intake air volume along with the increased noise	Improper fan impeller rotation sense	Change the phase connection sequence (three-phase motors only)
3.	Sudden vibrations of the fan are occurring	Solid element, foreign object being obstacle / barrier for the flow got stack in the impeller;	Disconnect the extraction fan and remove the barrier object
		The fan impeller is faulty	Replace it for new
4.	The exhaust hose got overheated and damaged	The nozzle was connected at the exhaust pipe of the running vehicle engine, when the fan has not been switched on.	Replace the damaged exhaust hose for new. Do not connect the nozzle before the fan is switched on.
		The engine of the serviced vehicle is running at full rotations for too long time, or the engine cubic capacity it too high	Do not exceed 60 seconds of continuous work at maximum rotations; Replace the damaged exhaust hose for new
5.	The hose cannot be pulled down smoothly	The worm gear got damaged or its rope got clenched (this refers the OBP/P-AL extractor only)	Contact the manufacturer

9. MAINTENANCE

Protect the exhaust hose from getting polluted with oils or lubricating grease. During the maintenance take into account especially subsequent elements:

- exhaust hose
- tensioning rope – stretching the hose
- lever mechanism of the self-release nozzle
- rope of the balancer
- guide profiles of the trolley
- self-tightening rubber apron – as a sealing element of the duct

In situations when any of the above mentioned elements got damaged – necessarily contact the manufacturer for repair or replacement of the faulty part. Requirements regarding the technical supervision of the fan are included in the Use and Maintenance Manual of the given fan. **Any repair / maintenance can be exclusively executed after the system is disconnected from the power supply system**.

10. OCCUPATIONAL HEALTH AND SAFETY

Start up and the operational use of the rail extraction system are admissible after getting acquainted with the contents of the present Use and Maintenance Manual. For the sake of safety, connection of the fan to the power system ought to be carried out according to the enclosed Connection Diagram and in compliance with the valid regulations of personnel protection against the short-circuit- and overload effects.
Any activities referring the connection to the power supply system, must be performed by an authorized person with electrical qualifications.

Any repair / maintenance should be carried out after the fan is switched off and its motor disconnected from the power supply system. Important is the fan impeller rotation sense (with reference to the arrow on the fan housing) – if this is not the case – change the phase connection sequence – this refers three phase motors only.

CAUTION!

1. In a situation when the serviced vehicle must leave suddenly the process hall, handle with care and mind that any person is within reach of the exhaust hose (with nozzle) movements – at the moment when the nozzle is being disconnected automatically;
2. Protect the exhaust hose from squeezing;
3. The vehicle engine can be started after the extraction fan is switched on. Otherwise (at the engaged nozzle) the hose might get overheated and damaged;
4. In the course of operational use, strictly follow the rule: the vehicle engine should not run at maximum rotations for longer time than 60 seconds;
5. **Maximum vehicle velocity** (**while leaving the measuring area**) **should not exceed 10 km/h**;
6. For safety reasons, while the exhaust hose is lifted – the operator should guide the hose and nozzle manually – i.e. hold the hose end until it gets completely lifted to its home position.

11. TRANSPORT AND STORAGE

For the transport time – all the duct elements are in packages to protect them from damage. The balancing extractor should be transported and stored in a cardboard package.
Balancing extractor and the self-tightening suction duct must be stored in a dry room and in areas of efficient ventilation.

12. TERMS OF WARRANTY

The period of warranty for the purchased device is indicated in the **Card of Warranty**. The warranty does not comprise:

- mechanical damage and malfunctions caused by User,
- device failures caused during the use which is in contradiction with the purpose of application and with the present Use and Maintenance Manual,
- malfunctions resulting from the improper transport, storage or incorrect maintenance.

Infringement of the Section 3 “Reservations of Producer” of the present Use and Maintenance Manual and, especially modifications undertaken by User on one’s own or use in contradiction with the purpose of application – shall result in the loss of warranty validity.

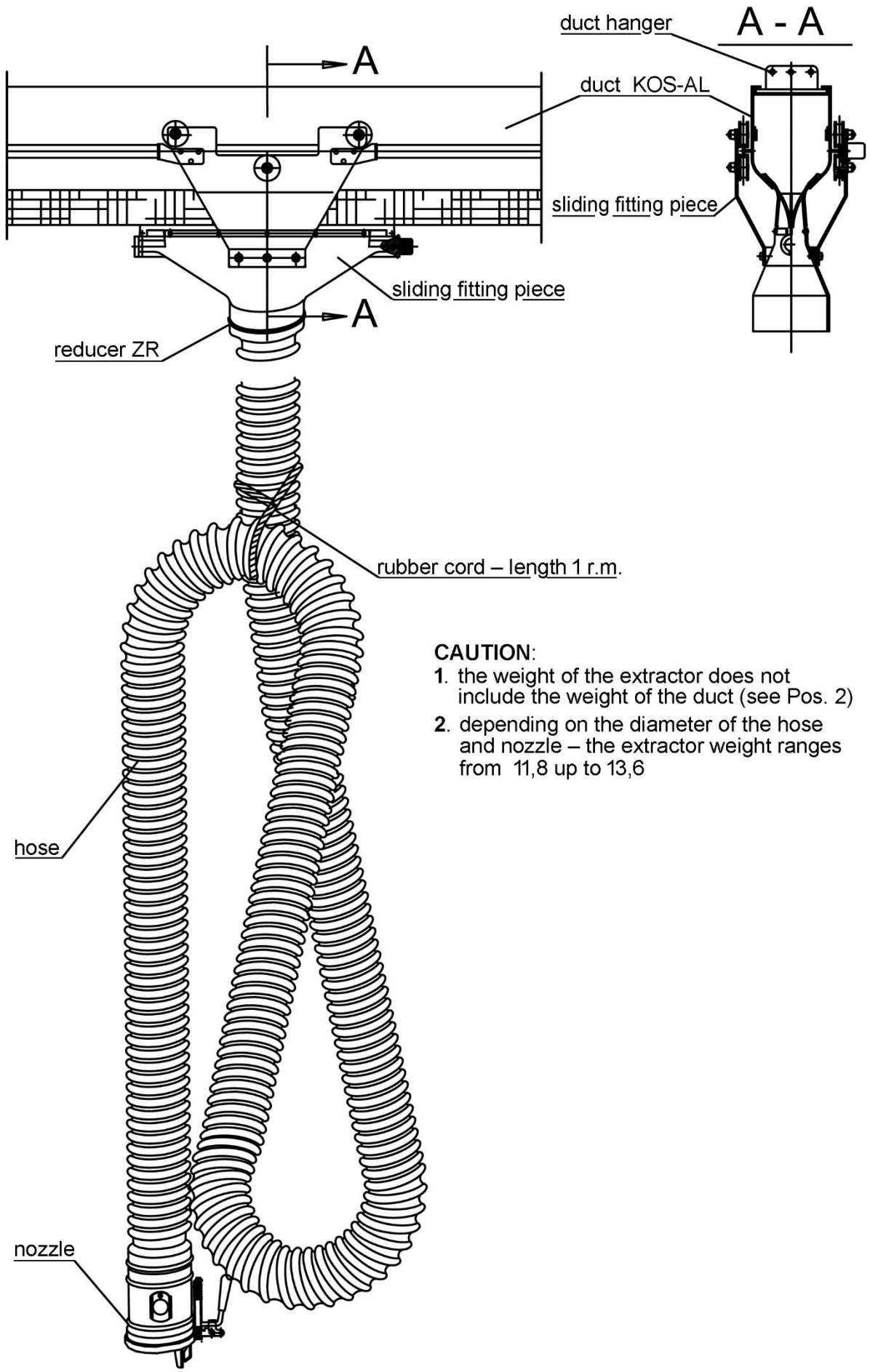


Fig. No.4 – OP-AL extractor on the KOS-AL suction duct

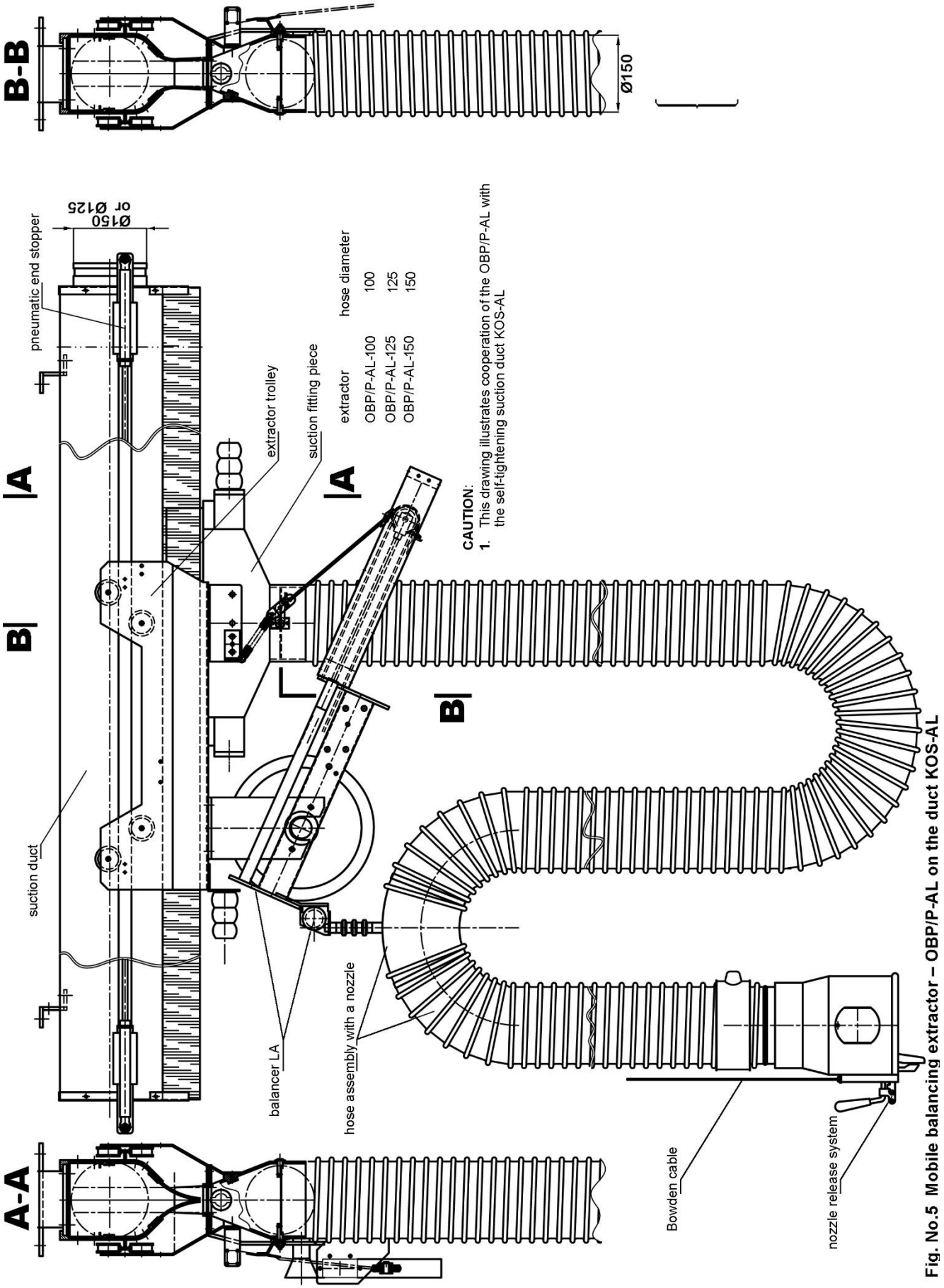


Fig. No.5 Mobile balancing extractor – OBP/P-AL on the duct KOS-AL

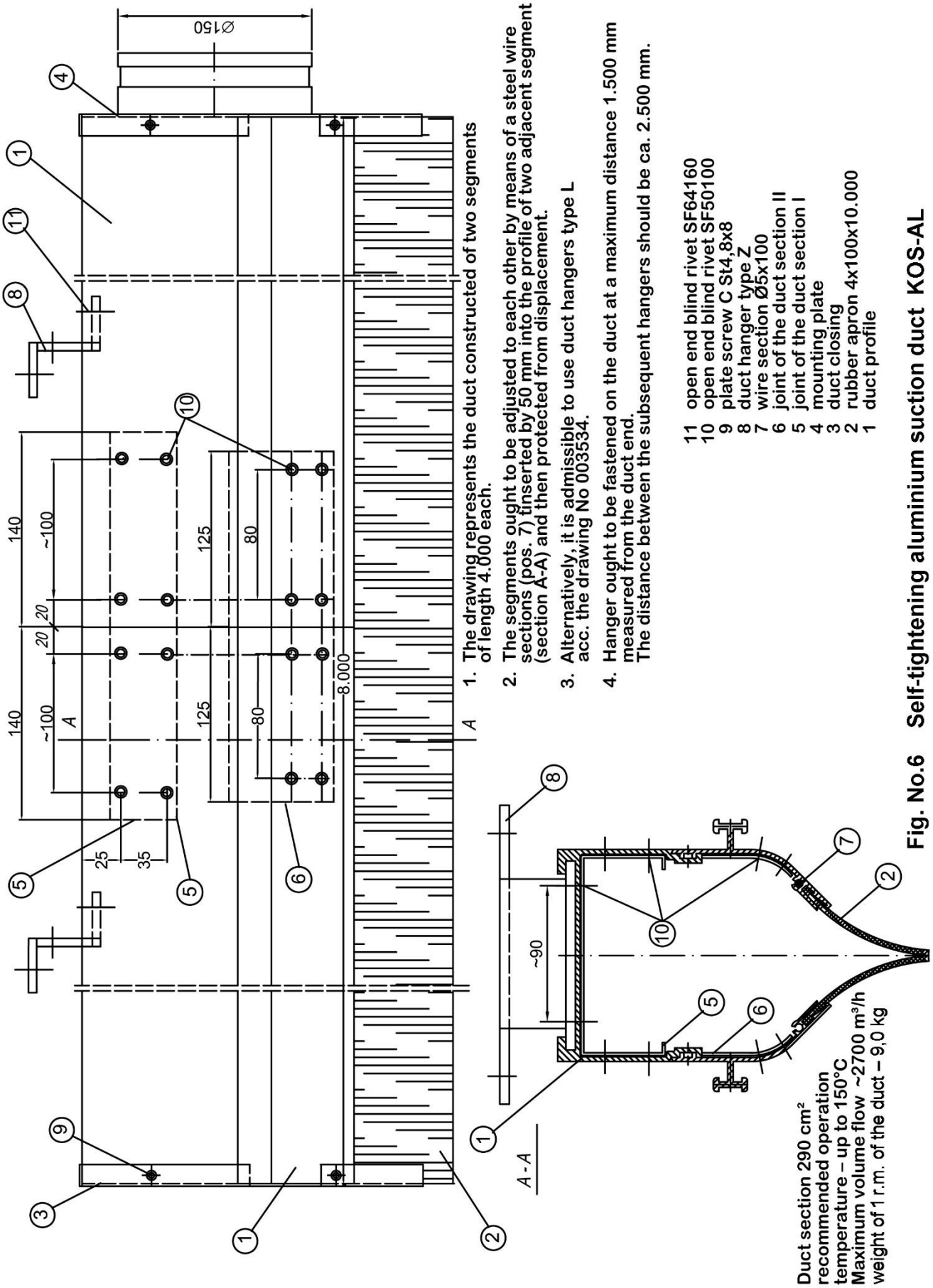


Fig. No.6 Self-tightening aluminium suction duct KOS-AL

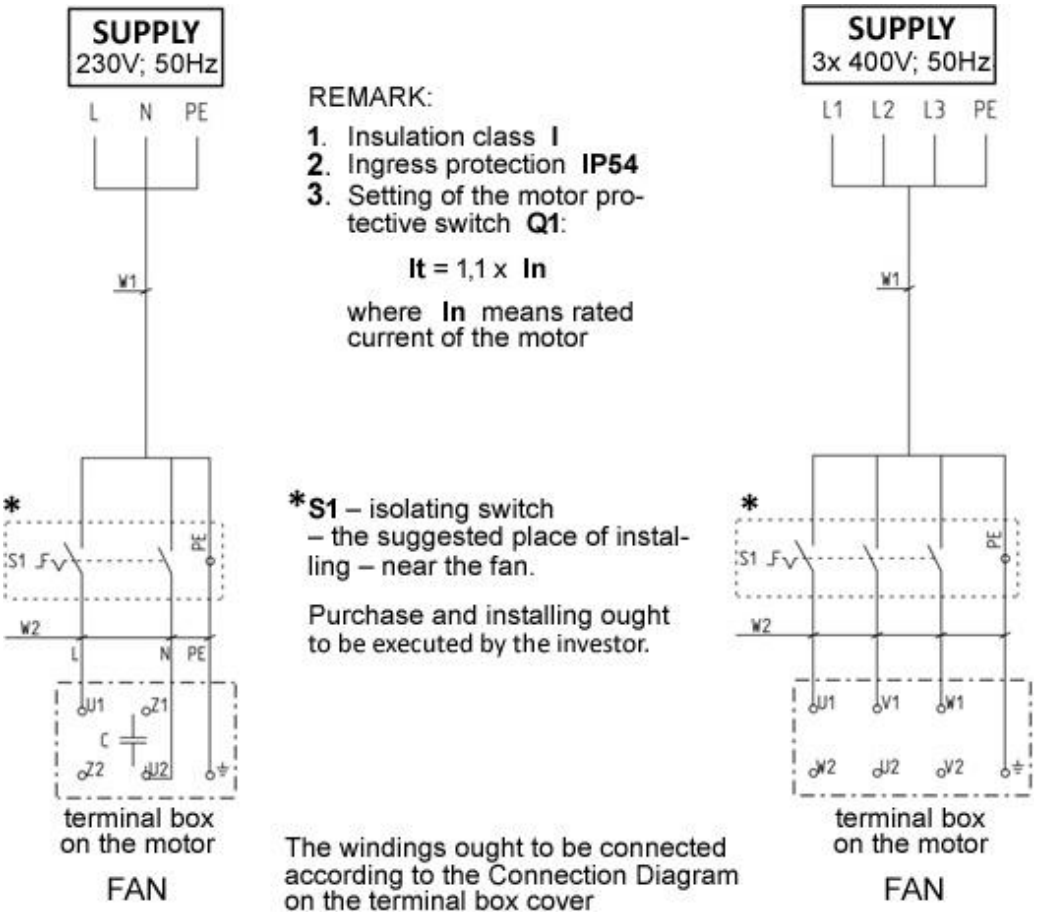


Fig. No.7 – Connection Diagram of the fans

13. DECLARATION OF CONFORMITY

CE

KLIMAWENT

DECLARATION OF CONFORMITY EC No. _____

Manufacturer (eventually also the authorised representative / importer):
name: **KLIMAWENT S.A.**
address: **81-571 GDYNIA, ul. Chwaszczyńska 194**

A person, authorised for issuing the technical documentation:
name and address: Teodor Świrbutowicz, **KLIMAWENT S.A.**

hereby declares that the product: **Rail Extraction System**

type / model: **KOS-AL; OBP/P-AL**

*serial number:*_____ *year of production:* _____

Meets the requirements of the subsequent European Directives:
2006/42/EC Directive of the European Parliament and of the Council of the 17 May, 2006 on machinery, amending the 95/16/EC Directive (recast) / Official Journal EC L157 of the 09.06.2006, page 24);

is in accordance with the requirements of the following harmonised standards:
EN ISO-12100:2012 Safety of machinery – General principles of design – Assessment and reduction of hazard

place, date	*signature of the authorised person*	*name, surname, function of the signatory*