

USE AND MAINTENANCE MANUAL



Reel Exhaust Extractor ALAN-U/E-N (electrical drive)

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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



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 **ALAN-U/E-N** Reel Exhaust Extractor.



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 **ALAN-U/E-N** 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);

2014/35/EC Directive of the European Parliament and of the Council of the 26 February, 2014 on the harmonisation of the laws of the Member States, relating to the making available on the market of electrical equipment designed for use within certain voltage limits / Official Journal EC L96 of the 29.03.2014;

Is in accordance with the subsequent harmonised standards:

EN ISO-12100:2012 Safety of machinery – General principles of design – Assessment and reduction of hazard

EN 60204-1:2018-12 Safety of machinery – Electrical equipment of machines – Part 1: General requirements

2. PURPOSE

ALAN-U/E-N Reel Exhaust Extractors with an electrical drive are designed for effective removal of noxious and hazardous chemical compounds emitted in exhaust gases of vehicles during diagnostics, adjustment, and engine tests and similar. They eliminate health hazards and risk of life of the operating personnel, provide clean air at the workplace, thereby providing more safety and comfort. They are used in bus depots, garages and car service stations. Simple use, ergonomic and economic solution as well as high capture efficiency – are their basic advantages. The extractor can be installed on a wall, under the ceiling and this provides efficient organisation at the workplace, (i.e. not being barrier for a car lift or for high vehicles).

The appliance works with following extraction fans manufactured by KLIMAWENT S.A.:

- built-on fans **FA** – installed directly at the exhaust reel,
- flange-type fans **WPA-E-N** – installed independently on a separate bracket,
- roof fans **WPA-D-N**.

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.
- Operational use with cooperation with an inefficiently functioning extraction fan, as this would result in overheating and damage of the exhaust hose.
- Protect the exhaust hose from mechanical damage and pollution with oils and solid lubricating grease.
- Maintenance and any repair can be executed exclusively by an authorised person.
- **During the use, the vehicle engine is allowed to work at maximum rotations for not longer time than 60 seconds.**
- During hose winding – observe that the hose is distributing on the reel evenly, regularly to avoid clenching.
- 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.
- 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.
- Manufacturer is not responsible for body lacerations, injuries, wounds – experienced by operator due to careless use or negligence.
- **Manufacturer bears no liability for effects of mechanical clenching of the hose reel, in case when the exhaust hose is distributing unevenly on the reel (during winding up) – and this could result in severe damage of the control system.**

4. TECHNICAL DATA

Table No.1

Extractor type	Equipped with a shut-off damper	Maximum torque	Maximum length of the exhaust hose	Diameter of the exhaust hose	Weight
		[Nm]	[m]	[mm]	[kg]
ALAN-U/E-8-N	no	40	8	Ø100	44,5
ALAN/P-U/E-8-N	yes				
ALAN-U/E-12-N	no	80	12	Ø150	46,5
ALAN/P-U/E-12-N	yes				

- CAUTION:**
1. upon selection of the extractor size – contact KLIMAWENT S.A.
 2. weight of the extractor is specified without the installed hose

Table No.2 – Technical Data – FA fans mounted directly to the exhaust reel

Type	Supply voltage [V]	Diameter inlet / outlet [mm]	Motor rate [kW]	Acoustic pressure level [dB(A)]*	Weight [kg]
FA-5-1	230	160 / 160	0,55	55	17
FA-5-3	3 x 400				
FA-7-1	230	160 / 200	1,1	72	24
FA-7-3	3 x 400				
FA-8-3	3 x 400	160 / 200	1,5	74	31

* Measurements have been carried out from distance of 5 metres

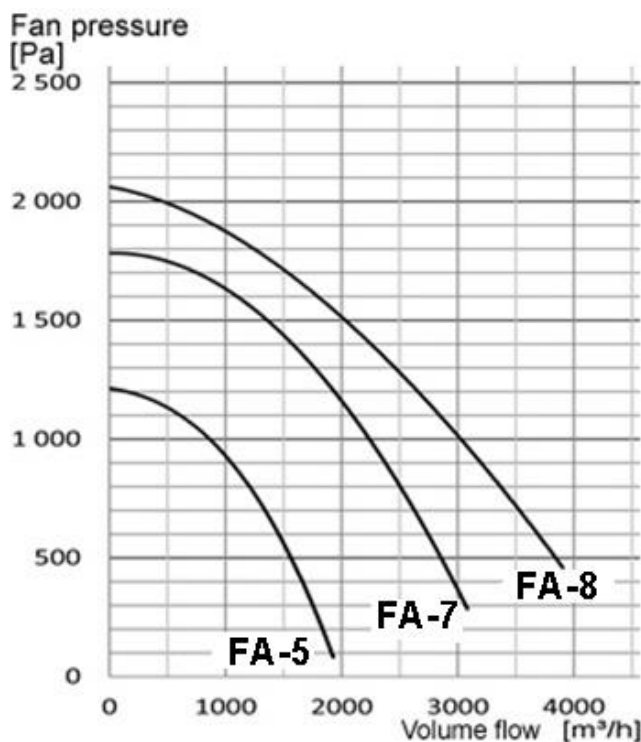


Fig. No.1 – FA – Flow charts

Table No.3 – Performances of the hose assemblies for the ALA-U/C-N reel extractor

Type of the hose assembly	Hose diameter [mm]	Weight [kg]	Hose length [m]	Recommended volume flow [m³/h]	Flow resistances ¹⁾ [Pa]	Thermal resistance [°C]	Application ⁴⁾	Cooperating fans
ZW-8/100	100	5,2	8	400	1100	150 ²⁾	SO	FA-5 WPA-5-E-N WPA-5-D-N
ZW-8/100/CF						300/150 ³⁾		
ZW-8/125	125	6,4	8	700	1200	150 ²⁾	SD	FA-5 WPA-5-E-N WPA-5-D-N
ZW-8/125/CF						300/150 ³⁾		
ZW-8/150	150	7,6	8	1500	1500	150 ²⁾	SC	FA-7 WPA-7-E-N WPA-7-D-N
ZW-8/150/CF						300/150 ³⁾		
ZW-12/100	100	7,8	12	400	1500	150 ²⁾	SO	FA-5 WPA-5-E-N WPA-5-D-N
ZW-12/100/CF						300/150 ³⁾		
ZW-12/125	125	9,5	12	700	1600	150 ²⁾	SD	FA-7 WPA-7-E-N WPA-7-D-N
ZW-12/125/CF						300/150 ³⁾		
ZW-12/150	150	14,8	12	1500	2000	150 ²⁾	SC	FA-8 WPA-8-E-N WPA-8-D-N
ZW-12/150/CF						300/150 ³⁾		

- 1) Flow resistances are given for the hose completely wound onto the reel.
- 2) Hose of thermal resistance 150°C (short duration 200°C).
- 3) First hose section (near the nozzle) is of length 2 m and of thermal resistance 300 °C (short duration 350°C); further hose section is of thermal resistance 150°C (short duration 200°C).
- 4) **SO** – car, **SD** – medium size vehicle, **SC** – truck.

To install the reel extractor to the wall or column apply a wall bracket, delivered upon separate order of Customer. For technical data of the fans type WPA-N see the KLIMAWENT S.A. catalogue, in Section “FANS”.

5. STRUCTURE AND FUNCTION

The Reel Exhaust Extractor consists of a winding reel installed in a framework (adapted for mounting under the ceiling or on a wall). Onto the reel is wound a hose with a nozzle. Nozzles are adapted to the diameter of the hoses (and selected to the Customer’s requirements) and are delivered upon separate order. Specification of the nozzles is in the KLIMAWENT S.A. catalogue. For hose reeling / unreeling is applied an electrical gear motor (inside the reel) of not high motor power and slow rotations.

To operate the gear motor and the fan is applied the ZE-ALAN-U/E control unit.

The nozzle has to be clamped at the exhaust pipe of the serviced vehicle by means of a clamp gripper. Additionally, the nozzle is extracting also the ambient air, mixing it with the exhaust volume and thus lowering the temperature of the exhaust fumes. The reel is mounted in slide bearings in the side walls of the framework. A grease nipple is located on the right wall of the framework. Whereas, on the left wall of the frame is placed the outlet of the extractor, to which can be installed a built-on radial fan type FA – installed directly to the hose reel (delivery on separate order).

The outlet of the extractor (or of the FA-type fan) ought to be connected with a rigid ventilation conduit to discharge the exhaust volume outside the process room. Section and length of the ventilation conduit (connecting the fan outlet) should be selected in such a way that the minimum flow at the nozzle is not lower than the value given in the section 4 “Technical Data” – “recommended extraction volume”.

Additionally, the Reel Exhaust Extractor can work with a flange type fan type WPA-E-N mounted independently on a wall bracket or with a roof fan type WPA-D-N.

The extractors can be equipped with a shut-off damper that opens and closes automatically while coiling / recoiling the hose onto the reel. Therefore, it is possible to apply a smaller extraction fan, while the extractors are connected to the main collecting ductwork, whereby the use coincidence factor is lower than 1. In each version the free hose overhang, (in a state when it is fully recoiled on the reel), should be from 1,5 up to 2 meters.

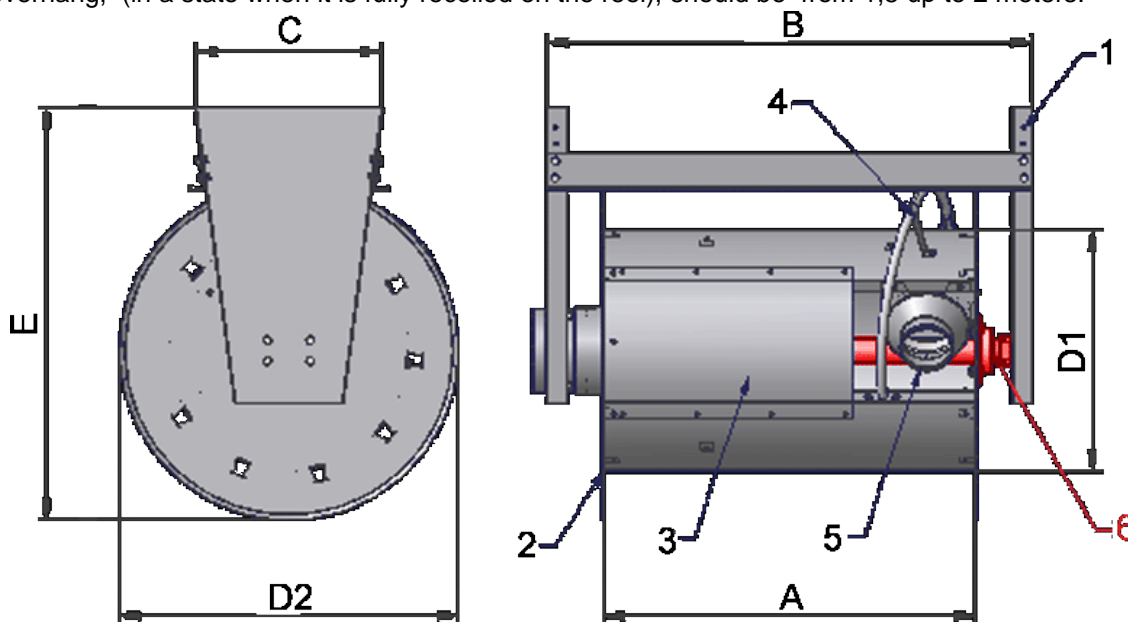


Table No.4

Extractor type	Dimensions [mm]					
	A	B	C	D1	D2	E
ALAN-U/E-8	775	1000	355	450	645	780
ALAN-U/E-12	1000	1225	355	450	645	780

1. framework
2. hose reel
3. reel cover
4. hose guiding spiral
5. connection fitting piece
6. gear motor

Fig. No.2 – ALAN-U/E-N – Description and dimensions of the exhaust reel

6. ASSEMBLY AND STARTUP

ALAN-U/E-N type extractor is being delivered in following assemblies:

- hose reel – containing the gear motor with a frame
- hose assembly – lengths 8 or 12 metres; diameters Ø100, Ø125 or Ø150 mm. The hose assembly consists of:
 - G-EX1 exhaust hose
 - hose clamps
 - rubber covers for the hose clamps
- nozzle.

Additionally, subsequent extraction fans and their accessories can be delivered upon separate order:

- built-on fans type **FA** – installed directly to the extractor reel;
- stand fans **WPA-E-N**
- roof fans **WPA-D-N**
- ventilation accessories such as: conduits (flexible or rigid), wall brackets, roof bases

INSTALLING OF THE FAN TYPE FA:

The fan has to be installed to the left wall of the framework. Following steps of installing:

1. put a sealing ring on the outlet connection of the reel extractor
2. in the bottom part, screw up 2 mounting bolts to fasten the solid bush to the left wall; put the fan support and screw it up with these bolts, along with the solid bush and the framework wall;
3. put the fan (with the motor) onto the connection in such a way – that the hangers holes (in the upper part of the fan) are matching the holes in the left framework wall, and the hole in the support is suitable to the hole in the fan housing. The fan inlet opening ought to be installed evenly onto the sealing ring;
4. finally, screw up the fan with the extractor to the hangers (by means of 4 bolts) and additionally to the support (1 bolt); altogether 5 bolts M8x20.

FASTENING OF THE HOSE ASSEMBLY TO THE REEL – Subsequent steps:

1. Turn by hand the hose reel to a position – providing easy access to install the hose assembly
2. Put the hose assembly inside the reel – screw up the reducer to the reducer body with 2 screws (Fig. No.3 “Hose assembly - installing”)
3. Put (sleeve on) the hose onto the nozzle and secure it with a hose clamp protected with a rubber cover.
4. As a final point, turn slowly by hand the reel to such a position that the hose assembly is entirely wound on the reel.

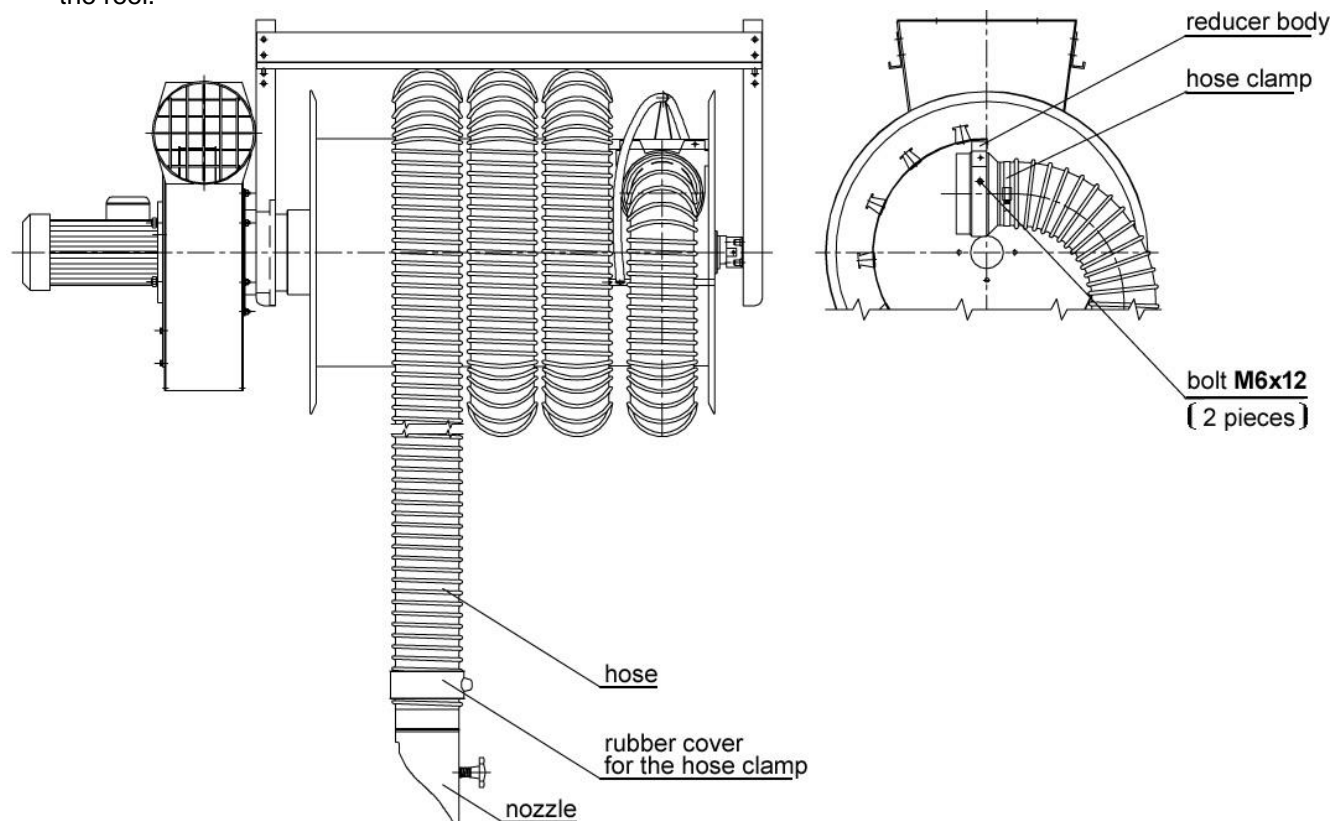


Fig. No.3 – Hose assembly – installing

Reel Exhaust Extractor ALAN/P-U/E-N with a shut-off damper – installing of the hose assembly to the reel

CAUTION:

After the shut-off damper is closed, do not turn the reel in direction of hose coiling. Further rotating of the reel (in direction of “hose wind onto the reel”) will stretch the line and shall contribute to a damage the line sheath, and even lead to the interruption of the line itself.

The reel position (at the closed shut-off damper) is the limit position for the fully coiled hose onto the reel. In the course of a hose wind-down the line is getting slack, and the spring opens the shut-off damper. The shut-off damper opens completely when the reel makes 1,5 up to 2 rotations.

Hose installing:

The hose ought to be connected after the reel is rotated in a direction of a hose wind-down – the necessary rotation quantity depends on the hose length to be coiled onto the reel – counted from the position when the shut-off damper is closed. Having fastened the hose, turn the reel in opposite direction by the same quantity of rotations

CAUTION!!!

In case the hose length (which is wound onto the reel) is changed, repeat the above mentioned steps.

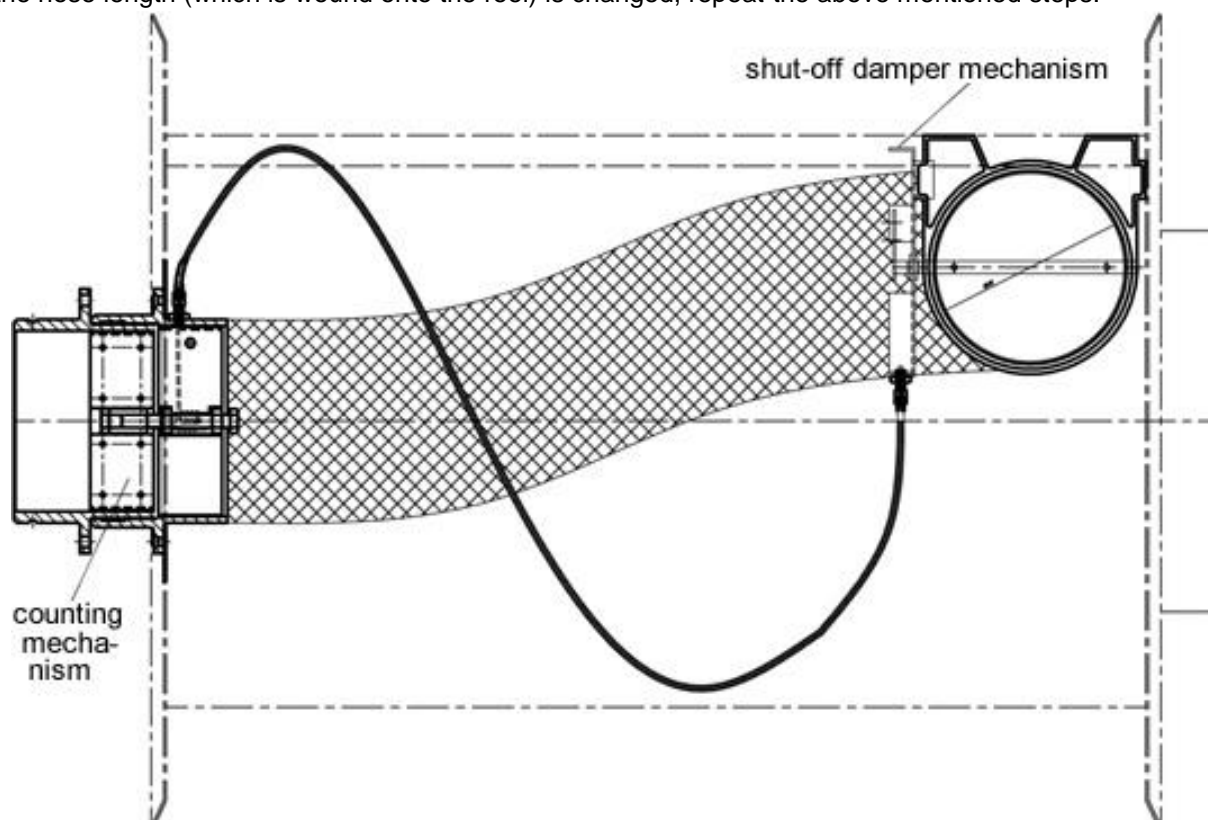


Fig. No.4 – Shut-off damper with the tensioning line

CAUTION: the setting of the counting mechanism and the setting of the line tension – can be performed after the moment when the spiral spring tension (of the right disc assembly) gets stabilised, and after the reel position becomes stabilised after the hose is completely wound onto the reel.

HOW TO CHANGE THE SPRING TENSION:

Once the reel is blocked from rotation, from the side of the counting mechanism (pos.1 Fig.No.4) pull out the nut housing (pos.3 Fig.No.5) after releasing the nut (pos.7) and screwing in the bolt (pos.6 Fig.6).

Having pulled out the nut housing (pos.3 Fig.No.5); you can change the tension of the winding spring by turning the reel in direction of “hose wind down”.

After the spring tension is properly adjusted and the device is in position of correctly coiled-on hose, (when the thrust rubber ring is blocked on the support) we are able to adjust the counting mechanism. Here are following steps:

1. wind down the hose by length of 1,5 hose coil
2. screw on the nut Pos.8 along with the bolt Pos.9 until resistance – onto the bolt Pos.5 Fig. No.5
3. Fasten the housing of the counting nut Pos.3 – so that it sleeves onto the counting nut Pos.8 Fig.No.5 – until the position as in the drawing
4. block the nut housing – by screwing out the bolt Pos.6 Fig. No.6 – and subsequently, block this with a nut Pos.7 Fig. No.6.

The appliance is adjusted and after the hose is coiled onto the reel, the shut-off damper closes afterwards.

CAUTION: in case when the spring tension is changed, repeat these steps.

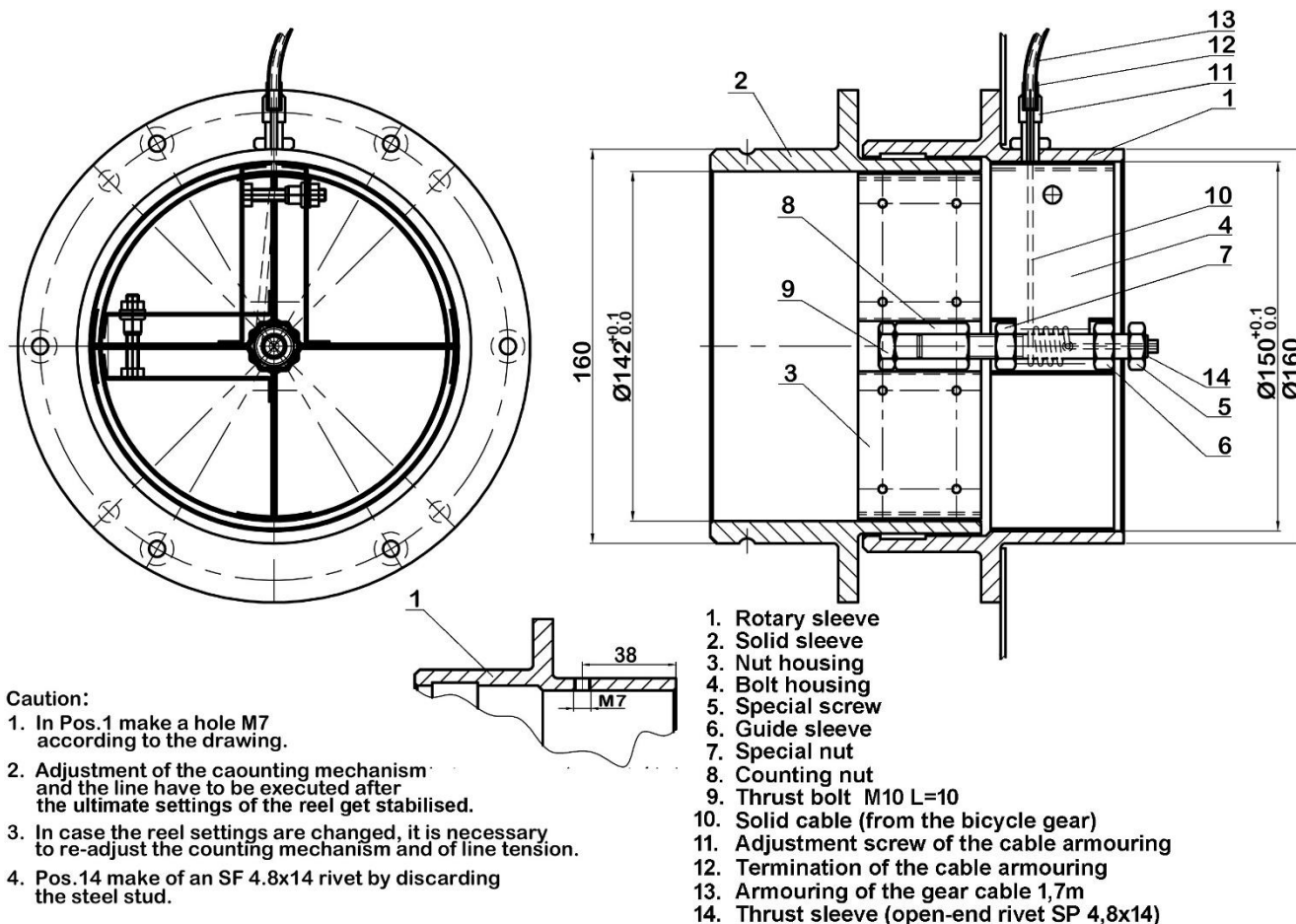


Fig. No.5 – Counting mechanism

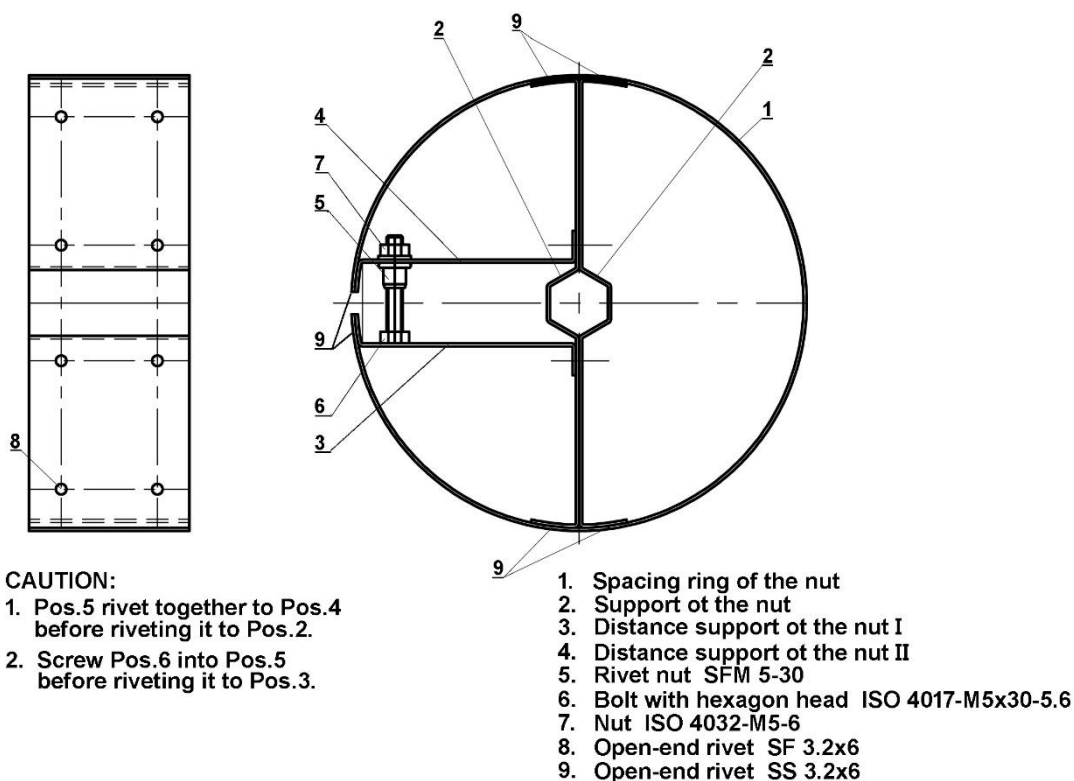


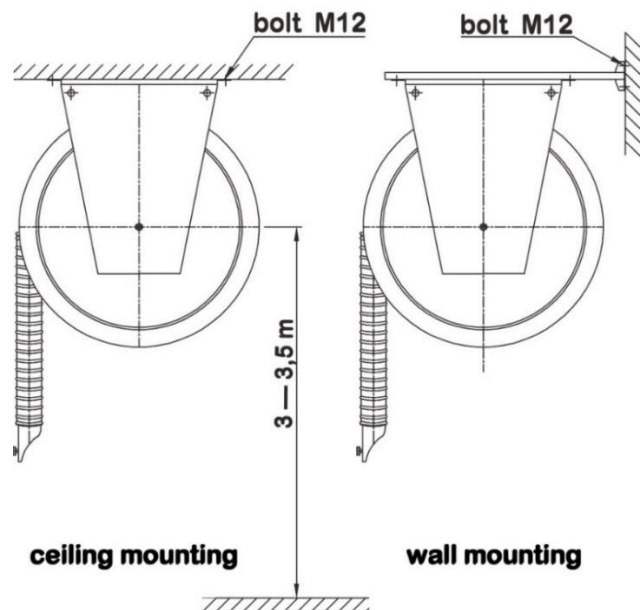
Fig. No.6 – Nut housing

MOUNTING THE EXTRACTOR AT THE WORKPLACE

The Reel Exhaust Extractor can be installed to the ceiling or by means of brackets to the wall or a supporting column. Prior to installing check the load capacity of the constructional elements of the building where the extractor has to be installed. The optimum mounting height of the extractor should be from 3 up to 3,5 metres. For mounting use bolts M12 class 5,6. **Important is that the reel axis is positioned horizontally.**

To install the Reel Exhaust Extractor at the operational place:

1. Lift the whole Reel Exhaust Extractor to a suitable height and mount it under the ceiling or to the wall in a well prepared place (caution – the fully assembled extractor can weight up to 100 kg).
2. Perform the adjustment of coiling / recoiling of the hose assembly, after the executed connection of the power supply and of the ZE-ALAN-U/E control unit; The adjustment is described in Section 7 of the present Use and Maintenance Manual “OPERATIONAL USE”.



Having installed the extractor under the ceiling or at the wall, connect the reel outlet (in application without the built-on fan) with the round section ventilation conduit, to discharge the exhaust volume out of the process room.

In application where the extractor is equipped with the built-on fan – FA, connect the fan outlet with a short section of a flexible conduit with the ventilation ducting. Depending on the diameter of the fan outlet, the ventilation conduit should have diameter Ø160 or Ø200 mm.

To prepare the Reel Exhaust Extractor for operational use, connect the fan motor and the ZE-ALAN-U/E to the power supply system, according to the enclosed Connection Diagram.

Important is the connection of the protective cable to the PE terminal in the control box. Install the control unit near the exhaust extractor as possible – in a place as convenient for the operator.

Fig. No.7 – Mounting positions of the reel extractor at the operational place

Having completed all the connections and after the fan start, it is important to check the impeller rotation sense of the fan impeller – this concerns the three-phase motor only. The impeller rotation sense ought to be according to the arrow on the fan housing.

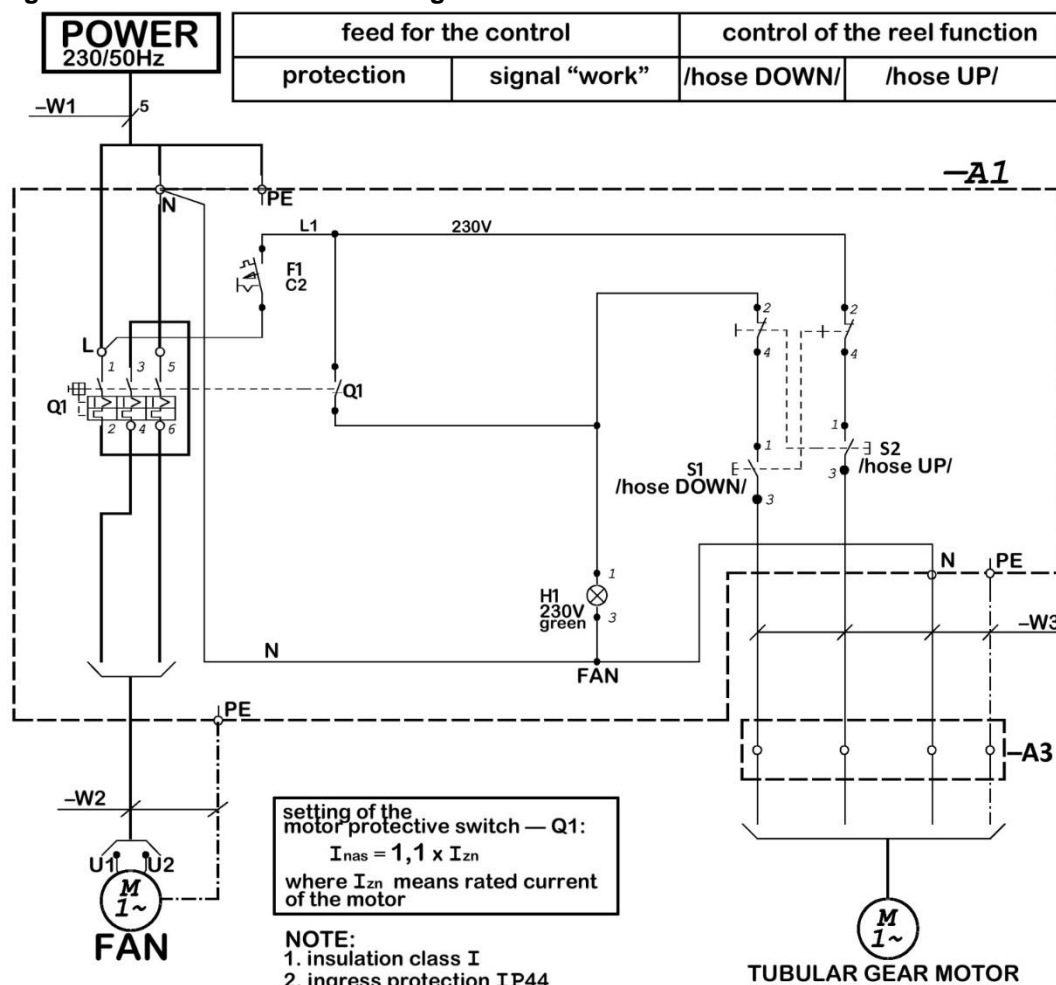


Fig. No.8 – Connection Diagram – Control unit and 230V supply

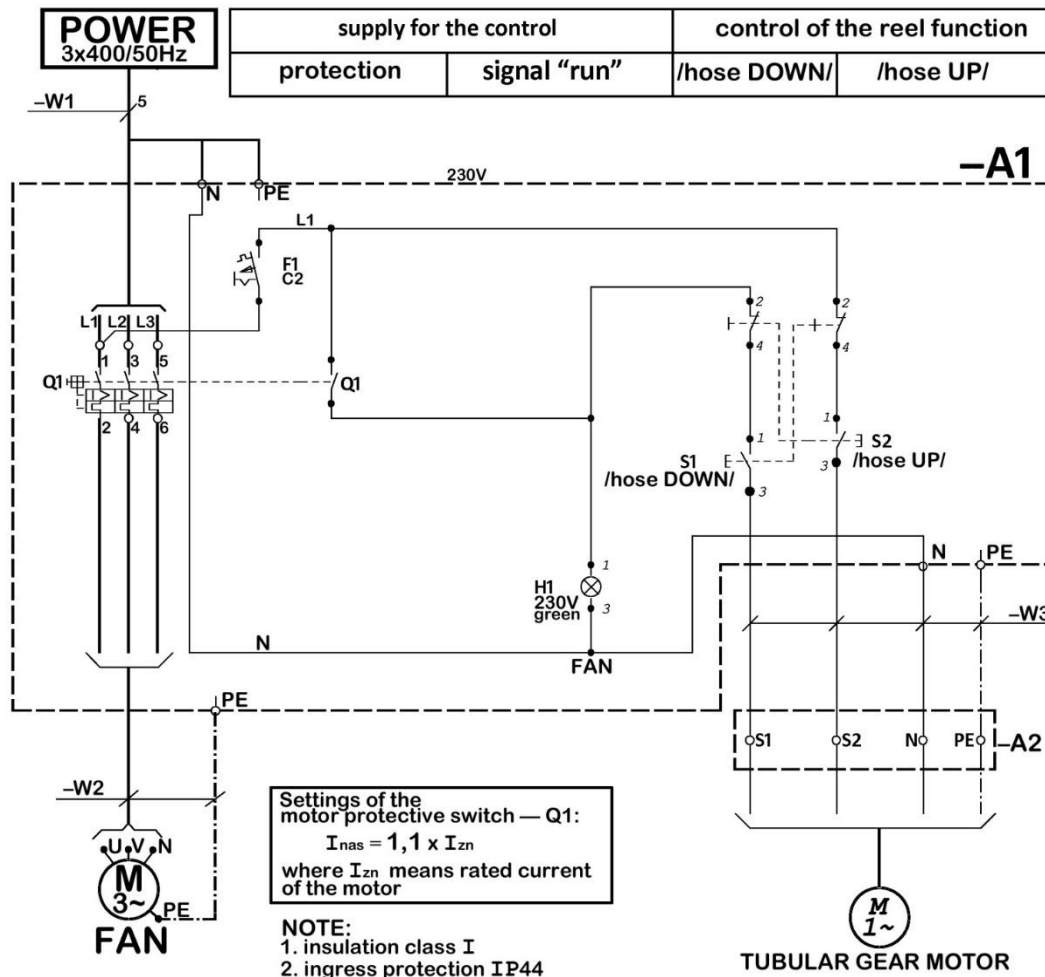


Fig. No.9 – Connection Diagram – Control unit and 3x400V supply

7. OPERATIONAL USE

The ZE-ALAN-U/E control unit serves to switch on and off the fan and to control the hose coiling/recoiling. The motor switch protects the fan motor from overload and short-circuit, non-complete-phase work and start-up blocking. Depending on the fan size, we apply adequate control unit.

Table No.5 – Specification of control units ZE-ALAN-U/E

Type of the control unit	Supply voltage [V]	Motor rate [kW]	Current range [A]	Fans to be applied with
ZE-ALAN-U/E-6,3-1	230	0,55	4,0-6,3	FA-5-1, WPA-5-D-1/N, WPA-5-E-1/N
ZE-ALAN-U/E-1,6-3	3x400	0,55	1,0-1,6	FA-5-3, WPA-5-D-3/N, WPA-5-E-3/N
ZE-ALAN-U/E-10-1	230	1,1	6,3-10	FA-7-1, WPA-7-D-1/N, WPA-7-E-1/N
ZE-ALAN-U/E-4-3	3x400	1,1; 1,5	2,5-4,0	FA-7-3, FA-8-3, WPA-7-D-3/N, WPA-8-D-3/N, WPA-7-E-3/N, WPA-8-E-3/N



Fig. No.10 – ZE-ALAN-U/E control unit

For safety reasons, in order to use the Reel Exhaust Extractor correctly – follow subsequent steps:

1. **Start the extraction fan using the motor disconnecter Q1 in the ZE-ALAN-U/E control unit (black button). This will be indicated by the H1 lamp.**
2. Press the **S1** push-button "reel DOWN the hose". The reel starts rotations, the hose assembly begins winding down to the requested operational length.
Any time when User releases this button – the reel stops its rotations. The reel continues its rotations after the **S1** button is pressed again.
3. Connect the suction nozzle at the exhaust pipe of the serviced vehicle. **Now is appropriate time to start the vehicle's engine.**
4. After the completed extraction, stop the vehicle engine and disconnect the suction nozzle from the exhaust pipe of the serviced vehicle.
5. By pressing the **S2** pushbutton "reel UP the hose" the hose-assembly is being wound up onto the reel. Pay attention that the hose is recoiling / distributing regularly on the reel surface.
6. Having completely recoiled the hose onto the reel, switch off the extraction fan by means of the **Q1** motor disconnecter (red button).

To obtain the most efficient function of the reel extractor, carry out the adjustments:

ADJUSTMENTS:

For this purpose are setting wheels of the limit switches on the right framework wall of the reel. Use here the enclosed "setting comb". The quantity of rotations of the setting wheel depends on the diameter and length of the hose assembly.

How to set the "hose wind up" onto the reel:

- turn the **black** wheel right (clockwise) „–“ to reduce the reel rotation number,
- turn the **black** wheel left (anti-clockwise) „+“ to increase the reel rotation number.

How to set the "hose wind down" from the reel:

- turn the **red** wheel right (clockwise) „+“ to reduce the reel rotation number,
- turn the **red** wheel left (anti-clockwise) „–“ to increase the reel rotation number.

By setting (manoeuvring with) these wheels User obtains the most suitable adjustment of the reel.

8. TROUBLESHOOTING GUIDE

Table No.6

	Problem	Possible reason	Corrective action
1.	Abrupt and significant drop in the intake air volume	Solid element, foreign object being obstacle / barrier for the flow got stuck in the suction nozzle or in the exhaust hose	Localise the obstacle object and remove it
2.	The exhaust hose got overheated and damaged	The engine of the serviced vehicle is running at full rotations for too long time, or the engine cubic capacity is too high	Do not exceed 60 seconds of continuous work at maximum rotations; Replace the damaged exhaust hose for new
3.	Sudden vibrations of the fan are occurring	Solid element, foreign object being obstacle / barrier for the flow got stuck in the impeller;	Disconnect the extraction fan and remove the barrier object
		Impeller is defective	Replace the impeller along with the motor for new
4.	Extraction fan runs at too high noise level and the flow efficiency is too low	Improper impeller rotation sense	Change the phase connection sense

9. MAINTENANCE

Construction of the Reel Exhaust Extractor and of the extraction fan provides their operational use without the continuous routine technical supervision. Any revisions and repair are admissible to be executed by an authorized person. In case when any defective function or failure is visually or by noise noticed, undertake technical revision. During the maintenance check the mechanical and electrical connections.

Any repair or revisions of the extraction fan ought to be carried out at the device disconnected from the power supply system (isolating switch). Every year, examine the extraction fan motor. Additionally, inspect the bearings (slackness), measure the resistance of the motor insulation and the resistance of the protective circuit. Protect the hose from getting polluted with oil / lubricating grease and from mechanical damage, especially from squeezing with the vehicle wheels.

Use of the Reel Exhaust Extractor in application with an inefficiently functioning extraction fan is not acceptable as this could cause overheating and damage of the hose.

10. OCCUPATIONAL HEALTH AND SAFETY

Start up and the operational use of the Reel Exhaust Extractor are admissible after getting acquainted with the contents of the present User's Manual. Connection to the power system ought to be carried out according to the enclosed Connection Diagram and in compliance with the instructions represented in the section 6 of the Use and Maintenance Manual. **Connection to the power system ought to be executed by a person of electrical qualifications and in compliance with the valid safety regulations.**

The fan motor has to be connected to the electrical wiring system – according to the present regulations within the range of personnel protection from electric shock and short-circuit- overload effects.

Necessarily check the impeller rotation sense, it has to be with reference to the arrow on the fan housing (this refers the three-phase motors only).

Prior to installing the Reel Exhaust Extractor check the load carrying capacity of the building structure where the device shall be mounted. Unsure mounting could result in an uncontrolled device detachment from the wall or ceiling and cause risk to User or personnel / people in the vicinity. **Any activities related to electricity ought to be carried out after the fan motor is disconnected from the power system.**

11. TRANSPORT AND STORAGE

The device ought to be stored in a dry and well ventilated room. It should be placed in horizontal position, with the winding reel upwards, on 2 wooden beams 60x60x500 mm. It is not acceptable to store one reel extractor on top of another (stacking). For the time of transport it has to be placed in a way described above, in foil and placed in a cardboard package as well as protected from an uncontrolled displacement and overturn. During transporting and storage, the accessories of the Reel Exhaust Extractor (e.g. hose assembly) ought to be in foil and placed in cardboard package.

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.

13. DECLARATION OF CONFORMITY**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: **Reel Exhaust Extractor**

type / model: **ALAN-U/E-N**

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);

2014/35/EC Directive of the European Parliament and of the Council of the 26 February, 2014 on the harmonisation of the laws of the Member States, relating to the making available on the market of electrical equipment designed for use within certain voltage limits / Official Journal EC L96 of the 29.03.2014;

Meets the requirements of the following harmonised standards:

EN ISO-12100:2012 Safety of machinery – General principles of design – Assessment and reduction of hazard

EN 60204-1:2018-12 Safety of machinery – Electrical equipment of machines – Part 1: General requirements

place, date

*signature of the
authorised person*

*name, surname,
function of the signatory*