EN

USE AND MAINTENANCE MANUAL

Reel Exhaust Extractor ALAN-U/C-N

(spring drive)

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

23.05.2019

www.klimawent.com.pl

issue: May 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 **ALAN-U/C-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/C-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);

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

ALAN-U/C-N Reel Exhaust Extractors with a spring 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 obstacle for a car lift or for high vehicles).
The appliance works with following 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 can 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.

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/C-8-N	no	50	8	∅100 ∅125 ∅150	44,5
ALAN/P-U/C-8-N	yes				
ALAN-U/C-12-N	no		12		46,5
ALAN/P-U/C-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

* Measurings have been carried out from distance of 5 metres

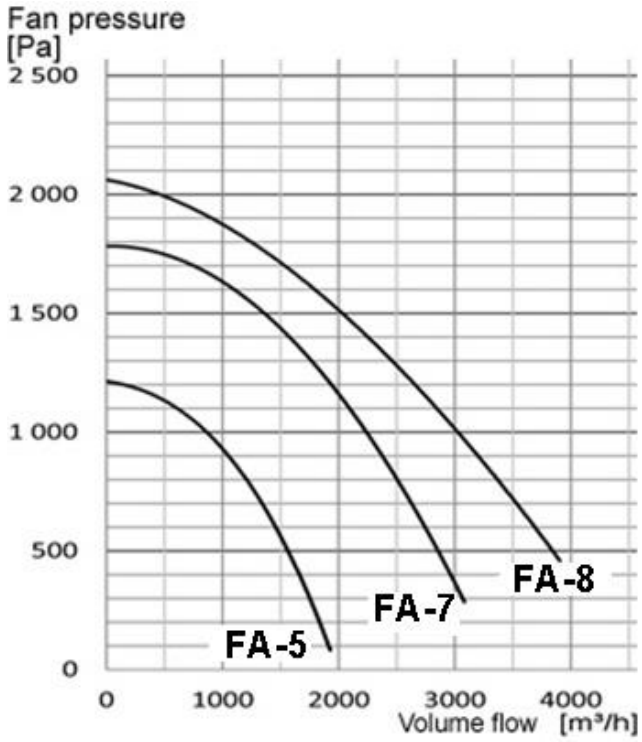


Fig. No.1 – FA – Flow charts

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 150ºC (short duration 200ºC).
3) First hose section (near the nozzle) is of length 2 m and of thermal resistance 300 ºC (short duration 350ºC); further hose section is of thermal resistance 150ºC (short duration 200ºC).
4) **SO** – car, **SD** – medium size vehicle, **SC** – truck.

To install the reel extractor to the wall or column apply a wall bracket, delivered on demand 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. The hose is being wound manually to the requested operational length, whereas hose recoiling onto the reel is proceeding due to the spring mechanism which is located on the right side of the reel. On the hose is fastened a rubber stopper which limits the hose recoiling while it is completely wound onto the reel. The nozzle has to be clamped at the exhaust pipe of the serviced vehicle by means of a clamp gripper. Additionally, the nozzle is sucking 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 supports 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 (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. To control the function of the extraction fan is the motor protective switch selected individually according to the rated current of the fan motor. (The motor protective switch does not belong to the standard delivery).
As a standard, the hose reel is equipped with:

- band brake – to slow down the rotations of the reel during recoiling,
- ratchet gear (locking pawl) – to block the hose assembly in the needed position.

Reel extractors ALAN-U/C-8-N and ALAN-U/C-12-N provide possibility of recoiling hoses of diameters: Ø100, Ø125 or Ø150 mm and maximum length of 8 metres and 12 metres. 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 to 2 meters.

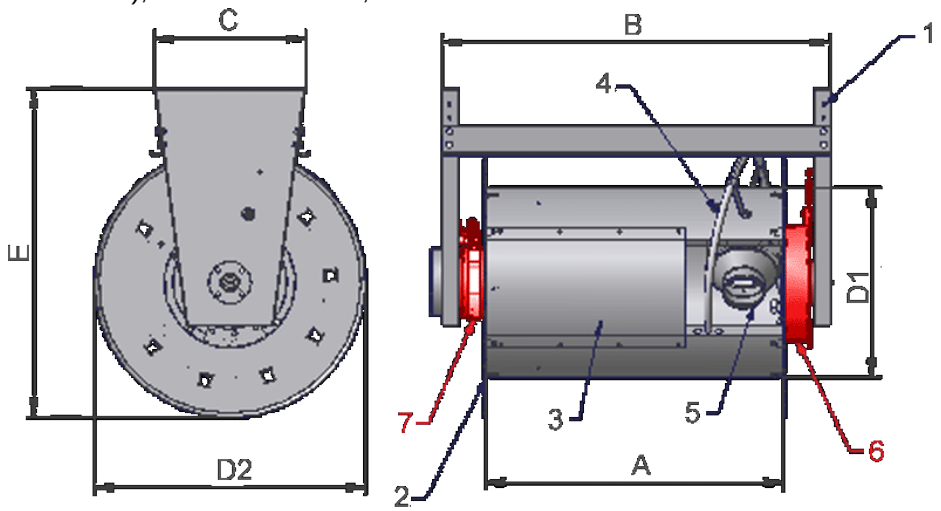


Table No.4

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

1. framework
2. hose reel
3. reel cover
4. hose guiding spiral
5. connection fitting piece
6. spring mechanism
7. band brake

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

6. ASSEMBLY AND STARTUP

ALAN-U/C-N-type extractor is being supplied in following assemblies:

- hose reel – along with the frame structure (including the spring mechanism and the brake),
- hose assembly – lengths 8 or 12 metres; diameters Ø100, Ø125 or Ø150 mm. The hose assembly consists of: hose, hose clamps, rubber clamp covers for the hose clamps,
- rubber stopper,
- nozzle.

Additionally, **extraction fans** of various types i.e. can be delivered upon separate order:

- built-on fans type **FA** – installed directly to the extractor reel;
- flange-type fans **WPA-E-N** or roof fans **WPA-D-N** – mentioned in Section 4;
  as well as ventilation conduits (flexible or rigid), wall brackets, roof bases and similar ventilation accessories.

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. 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

1. Turn by hand the hose reel to the left (when viewing onto the spring housing):
   - at least 3 rotations for the hose assembly of 8 metres length
   - at least 4 rotations for the hose assembly of 12 metres length (until the tensioning springs get stretched)
2. Protect the hose reel from uncontrolled back reeling and set it in such a position, as convenient for installing the hose assembly.
3. Put the hose assembly inside the reel – screw up the reducer to the reducer body with 2 screws (Fig. No.3).
4. Put (sleeve on) the rubber stopper on the hose and secure it with a hose clamp – in a distance of 2 metres from free end.
5. Install the nozzle at the hose end, fasten it with a hose clamp and secure it with a rubber clamp cover.
6. Pull gently the hose to release the reel blockade, so it is easy to turn slowly the reel and the hose assembly is winding smoothly onto the reel – finally the rubber stopper ends the winding.

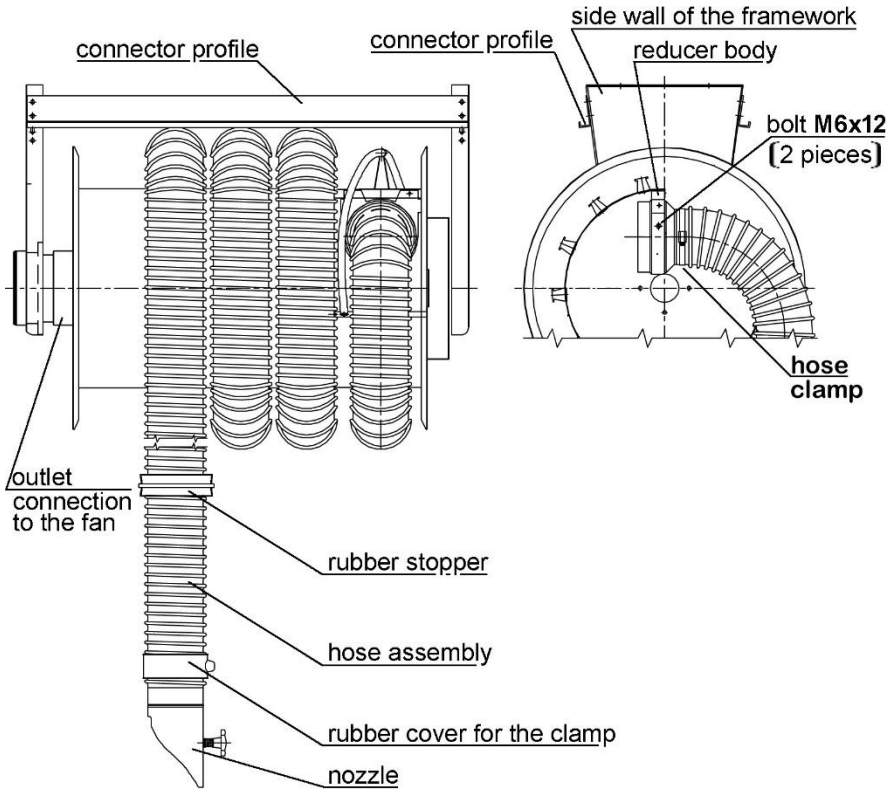


Fig. No.3 – Hose assembly – installing

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

CAUTION:
Do not turn the reel in direction of hose coiling after the shut-off damper is closed. Further rotating of the reel will stretch the line and shall contribute to a damage of the line sheath, and even break the line itself. The reel position (at the closed shut-off damper) is a limit position for the fully recoiled hose (on the reel). In the course of a hose wind-down the line is getting slack, and the spring opens the 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 – to the point when the shut-off damper is closed. Having fastened the hose, turn the reel in opposite direction (by the same quantity of rotations) and sleeve on the rubber stopper at the upper cross-bar, which stops further hose coiling onto the reel; whereby, (at the same time), protects the shut-off damper control from damage.

CAUTION!!!
In case the hose length (which is wound onto the reel) is changed, repeat these steps.

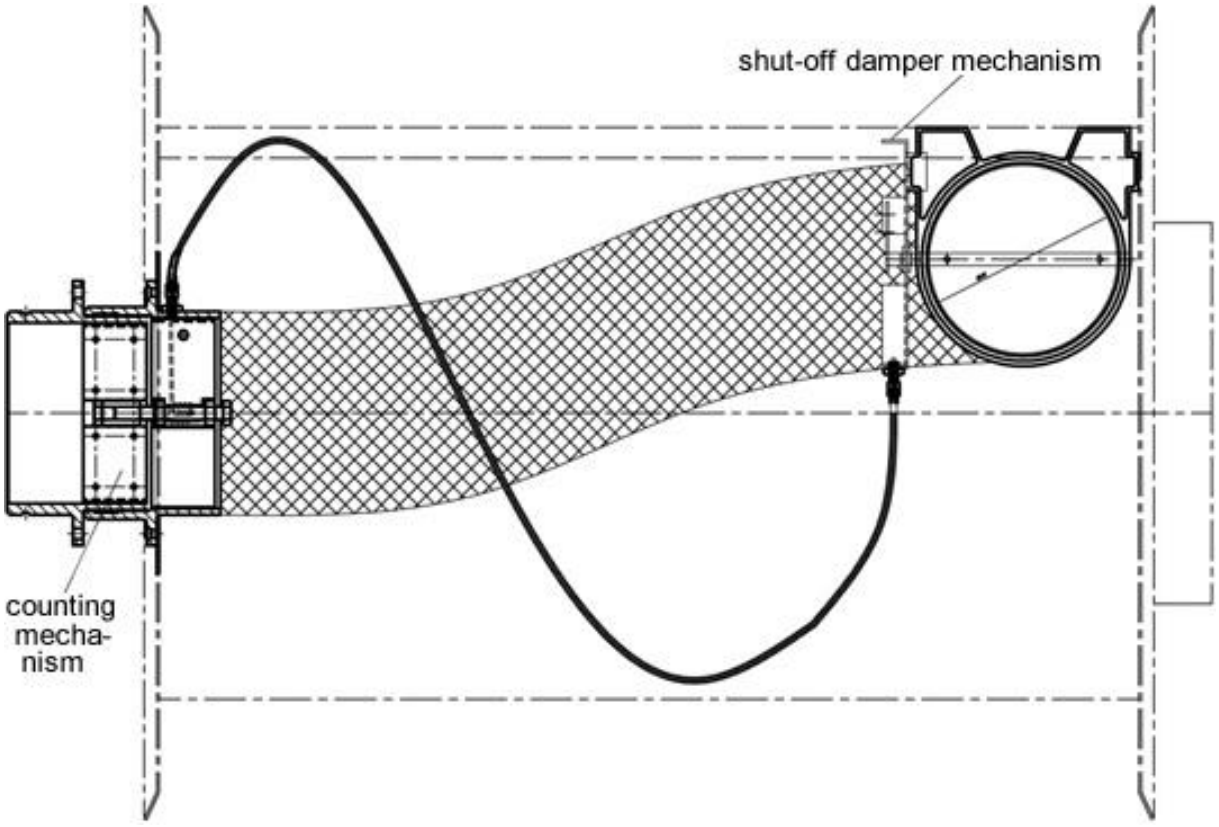


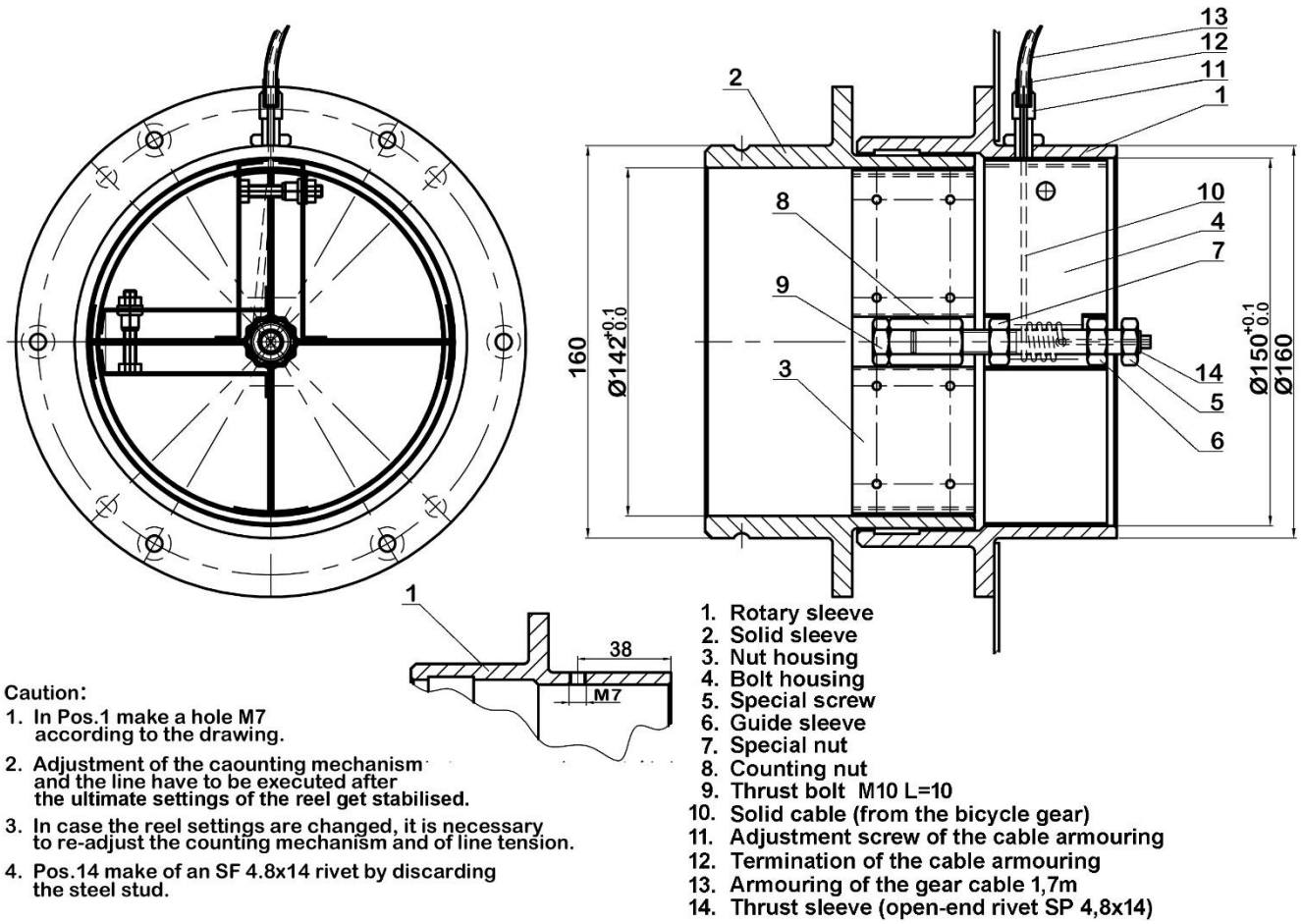
Fig. No.4 – Shut-off damper with the tensioning line

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 set) gets stabilised, and after the reel position gets 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 Fig. No.6) and screwing in the bolt (pos.6 Fig. No.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.

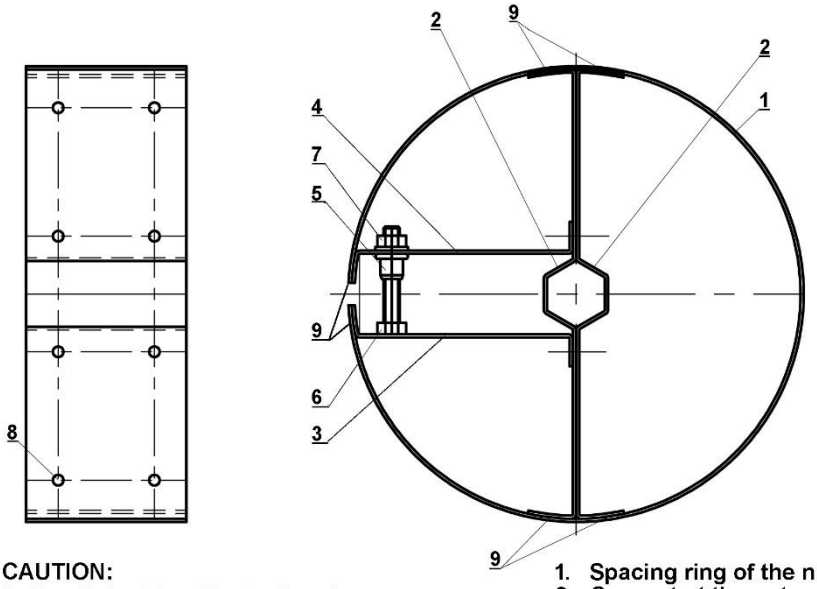
The appliance is adjusted and after the hose is coiled onto the reel, the shut-off damper closes afterwards.
CAUTION: in case when the spring tension is changed, repeat these steps.



Caution:
1. In Pos.1 make a hole M7 according to the drawing.
2. Adjustment of the caounting mechanism and the line have to be executed after the ultimate settings of the reel get stabilised.
3. In case the reel settings are changed, it is necessary to re-adjust the counting mechanism and of line tension.
4. Pos.14 make of an SF 4.8x14 rivet by discarding the steel stud.

1. Rotary sleeve
2. Solid sleeve
3. Nut housing
4. Bolt housing
5. Special screw
6. Guide sleeve
7. Special nut
8. Counting nut
9. Thrust bolt M10 L=10
10. Solid cable (from the bicycle gear)
11. Adjustment screw of the cable armouring
12. Termination of the cable armouring
13. Armouring of the gear cable 1,7m
14. Thrust sleeve (open-end rivet SP 4,8x14)

Fig. No.5 – Counting mechanism



CAUTION:
1. Pos.5 rivet together to Pos.4 before riveting it to Pos.2.
2. Screw Pos.6 into Pos.5 before riveting it to Pos.3.

1. Spacing ring of the nut
2. Support ot the nut
3. Distance support ot the nut I
4. Distance support ot the nut II
5. Rivet nut SFM 5-30
6. Bolt with hexagon head ISO 4017-M5x30-5.6
7. Nut ISO 4032-M5-6
8. Open-end rivet SF 3.2x6
9. Open-end rivet SS 3.2x6

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. **Important is that the reel axis is positioned horizontally**. For mounting use bolts M12 class 5,6. 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.

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. Several times check reeling / unreeling of the hose assembly and pay attention that the hose is evenly wound (distributed) onto to reel.
3. In case when requested, slide up or down the rubber stopper on the hose or adjust the reeling speed. These adjustments are described in the next section.

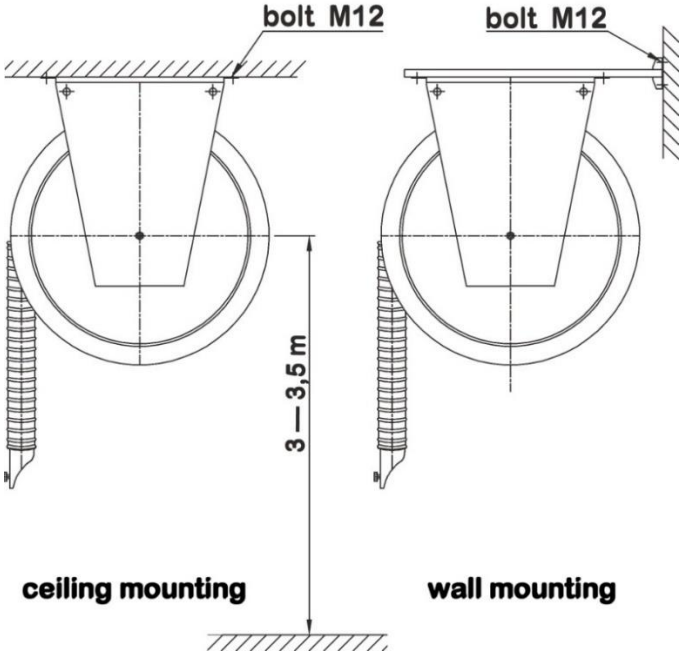


Fig. No.7 – Mounting positions of the reel extractor at the operational place

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 into the environment.
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 conduit. Depending on the diameter of the fan outlet, the ventilation conduit should have diameter Ø160 or Ø200 mm.
Having completed all the connections and after the fan start, **it is important to check the impeller rotation sense of the fan – this concerns only the three-phase motor**. The impeller rotation sense ought to be according to the arrow on the fan housing.

7. OPERATIONAL USE

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

1. **Operate the extraction fan with a pushbutton** "**START**".
2. Pull the nozzle with hose to the requested operational length and connect the nozzle at the exhaust pipe of the serviced vehicle. **Start the vehicle engine**.
   In application with a non-typical exhaust pipe construction, use the nozzle with a suction stand.
3. After the completed service, **stop the vehicle engine** and disconnect the nozzle from the exhaust pipe.
4. To wind up the hose, pull it slightly – the spring mechanism shall recoil the hose onto the reel. Pay attention that the hose is being wound evenly on the reel.
5. Having recoiled the hose, **switch off the extraction fan with a button** "**STOP**".

ADJUSTMENT OF THE LIFT HEIGHT OF THE NOZZLE:

1. Having installed the extractor under the ceiling or at the wall, turn the reel and block it with the ratchet gear so that the suction nozzle is in the level of the floor.
2. Release the clamp of the rubber stopper and choose its appropriate fixing position on the hose – according to the installing height of the extractor.
3. After the rubber stopper is fastened in a new fixing point (i.e. clamp tightening), pull slightly the hose to start the spring retracting mechanism and check the reeling operation.

ADJUSTMENT OF THE BAND BRAKE:

- To increase the braking force turn the adjustment screw to the right.
- To reduce the braking force turn the adjustment screw to the left.
- Remember to lock the above mentioned screw with a counter-nut.

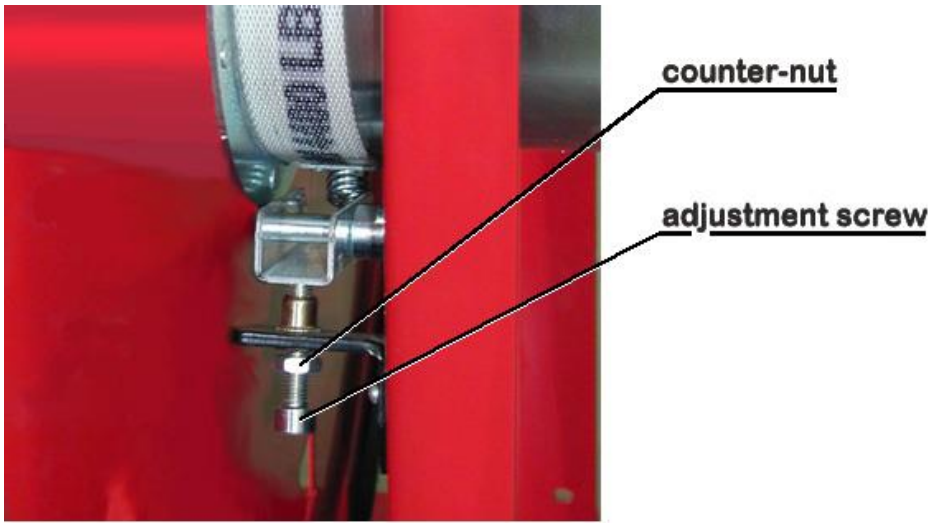


Fig. No.8 – Band brake

REMARKS REGARDING THE OPERATIONAL USE

- Any use of the extractor with the improperly functioning extraction fan is not acceptable. This could contribute to overheating and damage of the hose assembly.
- Any servicing, repairs and adjustment ought to be executed by an authorized person only.
- For safety reason, during winding the hose onto the reel, operator has to guide the hose end with hand.
- Protect the hose from mechanical damage and from getting polluted with oil and solid lubricants.

8. TROUBLESHOOTING GUIDE

Table No.5

	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 stack 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 it 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 stack 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

Any revisions and repair are admissible to be executed by an authorized person. Construction of the Reel Exhaust Extractor and of the extraction fan provides their operational use without the continuous routine technical supervision. 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 and 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**.

Necessarily check the impeller rotation sense, it has to be with reference to the arrow on the fan housing

(**three-phase motor 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.

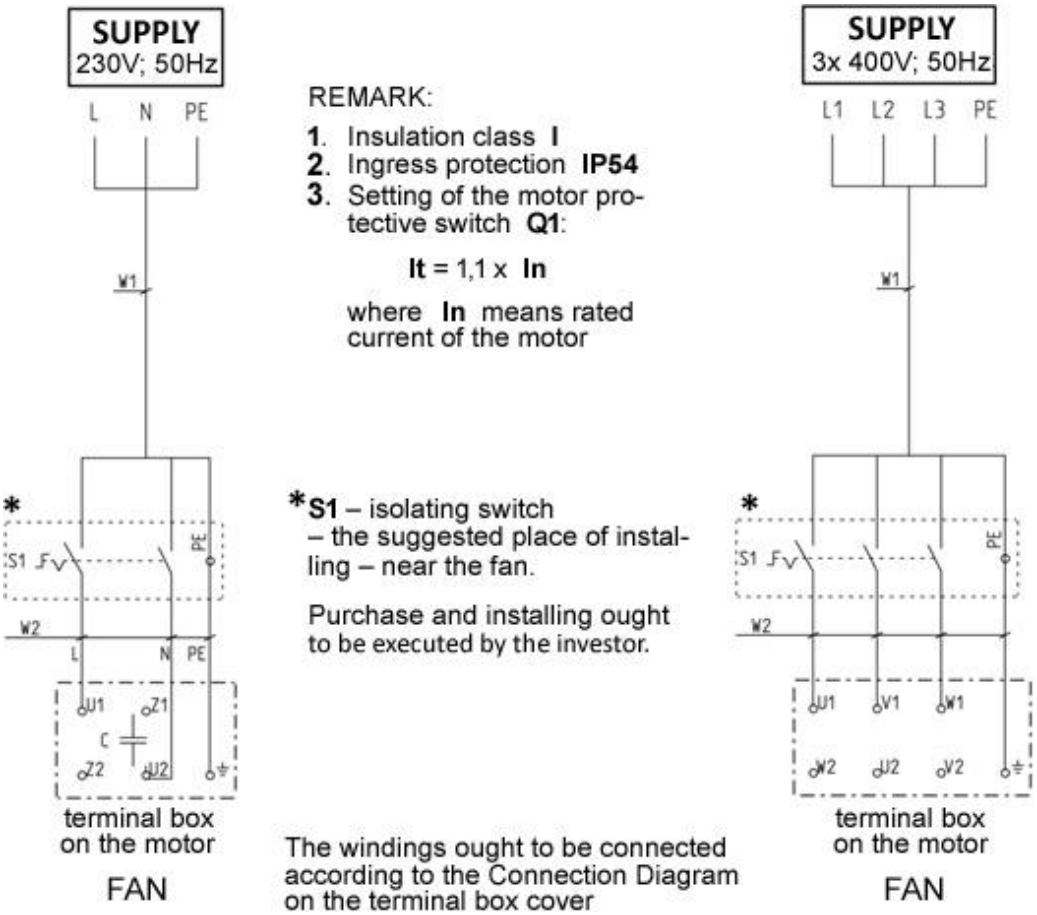


Fig. No.9 – Connection Diagram of the fans

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: **Reel Exhaust Extractor**

type / model: **ALAN-U/C-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);

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*

NOTES: