

# Use and Maintenance Manual



## Explosion-proof roof fans SPARK-S/Ex

### Contents:

1.	<b>Introductory Remarks</b> .....	2
2.	<b>Application</b> .....	3
3.	<b>Reservations of Producer</b> .....	3
4.	<b>Technical Data</b> .....	4
5.	<b>Structure and Function</b> .....	15
6.	<b>Assembly and Start-up</b> .....	15
7.	<b>Operational Use</b> .....	17
8.	<b>Troubleshooting Guide</b> .....	18
9.	<b>Maintenance</b> .....	18
10.	<b>Occupational Health and Safety</b> .....	19
11.	<b>Transport and Storage</b> .....	19
12.	<b>Terms of warranty</b> .....	20
13.	<b>Sample of the Declaration of Conformity</b> .....	22

808W71	SPARK-S-160/3000/Ex	04.06.2019/EN	808W77	SPARK-S-315/1500/Ex	04.06.2019/EN
808W72	SPARK-S-200/3000/Ex	04.06.2019/EN	808W78	SPARK-S-400/1500/Ex	04.06.2019/EN
808W73	SPARK-S-200/1500/Ex	04.06.2019/EN	808W79	SPARK-S-400/1000/Ex	04.06.2019/EN
808W74	SPARK-S-250/3000/Ex	04.06.2019/EN	808W80	SPARK-S-500/1000/Ex	04.06.2019/EN
808W75	SPARK-S-250/1500/Ex	04.06.2019/EN	808W81	SPARK-S-630/1000/Ex	04.06.2019/EN
808W76	SPARK-S-315/3000/Ex	04.06.2019/EN	808W82	SPARK-S-710/1000/Ex	04.06.2019/EN

## 1. Introductory Remarks

The purpose of the present Use and Maintenance Manual is to supply User with directions within the range of application, installation, start-up and the use of the **SPARK-S/Ex explosion-proof roof fans**.

**Installing, start up and operational use are exclusively admissible after getting acquainted with the contents of the Use and Maintenance Manual.**

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 the **SPARK-S/Ex** explosion-proof roof fans meets the requirements of the current state of technology as well as the safety and health assurances included in:

- **2006/42/EC Machinery Directive** of the European Parliament and of the Council of May 17<sup>th</sup>, 2006 on machinery – amending the 95/16/EC (recast) /*Journal of Laws EC L157 of 09.06.2006, page 24/*
- **2014/35/EC Directive** of the European Parliament and of the Council of February 26<sup>th</sup>, 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. /*Journal of Laws EC L96 of 29.03.2014/*
- **2014/34/EC ATEX Directive** of the European Parliament and of the Council of February 26<sup>th</sup>, 2014 on the harmonisation of the laws of Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres. /*Journal of Laws EC L96 of 29.03.2014 /*

Additionally, the appliance meets following harmonized standard:

- |                                    |  |
|------------------------------------|--|
| ● <b>EN ISO-12100:2012</b>         | – “Safety of machinery – Basic concepts, general principles for design. Risk assessment and risk reduction”.   |
| ● <b>EN 60204-1:2018-12</b>        | – “Safety of machinery – Electrical equipment of machines. Part 1: General requirements”.  |
| ● <b>EN ISO 13857:2010</b>         | – “Safety of machinery – Safe distances to prevent hazard zones being reached by upper and lower limbs”.   |
| ● <b>EN 80079-0:2013/A11:2014</b>  | – “Electrical appliances in areas of gas explosion risk. Part 0: General requirements”.  |
| ● <b>EN 60079-7:2016-02</b>        | – “Electrical appliances for areas of gas explosion hazard. Part 7: Increased safety construction “e”.   |
| ● <b>EN 1127-1:2011</b>            | – “Explosive atmospheres. Explosion prevention and protection. Basic terminology and methodology”.   |
| ● <b>EN ISO 80079-36:2016-07</b>   | – “Explosive atmospheres – Part 36: Non-electrical equipment for explosive atmospheres. Methodology and requirements.  |
| ● <b>EN ISO 80079-37:2016-07</b>   | – “Explosive atmospheres – Part 37: Non-electrical equipment for explosive atmospheres. Non-electrical types of protection. Constructional safety “c”, supervised ignition “b”, immersion in a liquid “k”. |
| ● <b>EN 14986:2017-02</b>          | – “Designing of fans applied in areas of explosion hazard”   |
| ● <b>ISO 14694:2003+AMD1:2010</b>  | – “Industrial fans – Guidelines on the quality of balancing and the vibration level.   |
| ● <b>ISO 14695:2008/AC:2017-10</b> | – “Industrial fans – Methods of measurements of vibration of fans.   |


## 2. Application

SPARK-S/Ex explosion-proof roof fans are intended for use in areas of explosion risk, where explosive atmosphere, (i.e. mixture of flammable substances in form of gas and vapour with the air, whereby after ignition – in atmospheric conditions – the burning mass would expand within the whole non-burning mixture) is likely to occur. The fans have been constructed for application within temperature range -20 up to 40°C. The forwarded air must be dry, of dustiness not exceeding 0,3 g/m<sup>3</sup>, without viscous, aggressive contaminants and of maximum temperature +60°C.

**According to the 2014/34/EC ATEX Directive and EN ISO 80079-36 the device carries the level of protection: “HIGH” – as a device classified for Group II, Category 2, and it can work in areas where explosive atmospheres are likely to occur. The fan can be applied in zones 1, 2 (G).**

The appliance is marked on the nominal data plate:  **II 2 G c Ex e II T3**

**Marking of the operational conditions of the device: group / category / hazard / class.**

-  marking for explosion proof properties of the appliance,
- **group II** – the device is designed for on-ground work, in factories, in areas of explosion hazard, **but this cannot be methane (firedamp) hazard** neither carbon dust occurrence,
- **category 2** – the device is designed for application in areas where **explosive atmospheres are likely to occur**,
- **gas hazard G**,
- **“c”** – constructional protection,
- **Ex** – mark of the electrical device – constructed and tested according to the European Standards for work in areas of explosion hazard,
- **execution “e”** – type of construction of the motor (a motor of increased safety)
- gas explosion **group II** – occurring in on-ground factories – the fans are constructed according to the PN-EN 14986:2009, whereby they can be applied for gases in explosion groups **IIA** and **IIB** and **hydrogen**,
- **temperature class T3** – the surface temperature of any part of the appliance should not exceed **200°C** (during the normal operation). The device can be used safely in explosive atmospheres belonging to temperature classes **T1, T2, T3**.

## 3. Reservations of Producer

- A. Manufacturer accepts no liability for any consequences following from the operational use that is in contradiction to the purpose of application.
- B. Installing of any additional elements not belonging to the normal device structure (or accessory set) is not acceptable.
- C. Do not undertake any structural changes or constructional modifications on the device on one's own.
- D. Protect the appliance's housing from mechanical damage.
- E. Prior to installing check the load carrying capacity of the building structure where the device will be mounted. Unsure mounting could cause hazard to personnel/people in vicinity and effect in damage of the device.



- F. **Do not use the fan for conveying the air containing viscous impurities that could deposit (build up) on the device surface, especially on the impeller.**
- G. **Neither use it for forwarding the air with aggressive pollutants which will destructively effect the device structure.**

- H. During operation, the maximum impeller rotations should not exceed the nominal rotations.
- I. **Manufacturer is not responsible for wounds, injuries, body laceration experienced by User or personnel during the improper operational use.**

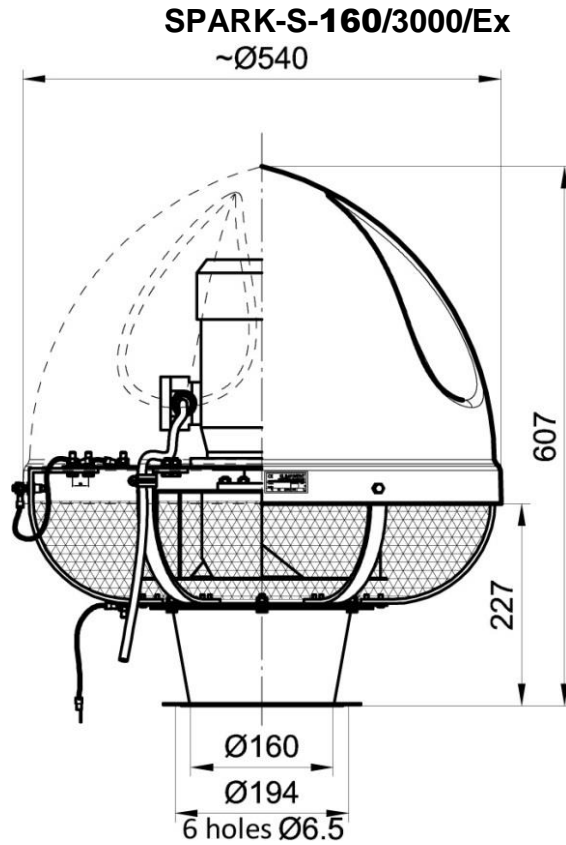
## 4. Technical Data

Table No.1

Type	Synchron. rotations [1/min]	Motor rate [kW]	Acoustic pressure level					Maximum volume flow [m <sup>3</sup> /h]	Maximum vacuum [Pa]	Weight [kg]
			outlet				inlet			
			1 m	5 m	10 m	15 m				
SPARK-S-160/3000/Ex	3000	<b>0,55</b>	79	70	62	59	71	2300	820	<b>19</b>
SPARK-S-200/3000/Ex	3000	<b>0,55</b>	79	69	62	59	71	2700	820	<b>20</b>
SPARK-S-200/1500/Ex	1500	<b>0,55</b>	74	64	57	54	60	2800	730	<b>39</b>
SPARK-S-250/3000/Ex	3000	<b>0,55</b>	80	70	63	60	74	3000	540	<b>20</b>
SPARK-S-250/1500/Ex	1500	<b>1,1</b>	75	66	58	55	65	4600	800	<b>45</b>
SPARK-S-315/3000/Ex	3000	<b>0,55</b>	80	70	63	60	74	3400	540	<b>21</b>
SPARK-S-315/1500/Ex	1500	<b>1,5</b>	80	70	63	60	70	7800	900	<b>61</b>
SPARK-S-400/1500/Ex	1500	<b>3,0</b>	85	75	68	64	72	11100	1000	<b>72</b>
SPARK-S-400/1000/Ex	1000	<b>0,75</b>	73	62	56	52	62	7000	410	<b>62</b>
SPARK-S-500/1000/Ex	1000	<b>2,2</b>	78	68	61	58	69	15000	540	<b>104</b>
SPARK-S-630/1000/Ex	1000	<b>5,5</b>	84	74	67	64	77	22500	690	<b>178</b>
SPARK-S-710/1000/Ex	1000	<b>7,5</b>	87	77	70	66	77	31000	760	<b>208</b>

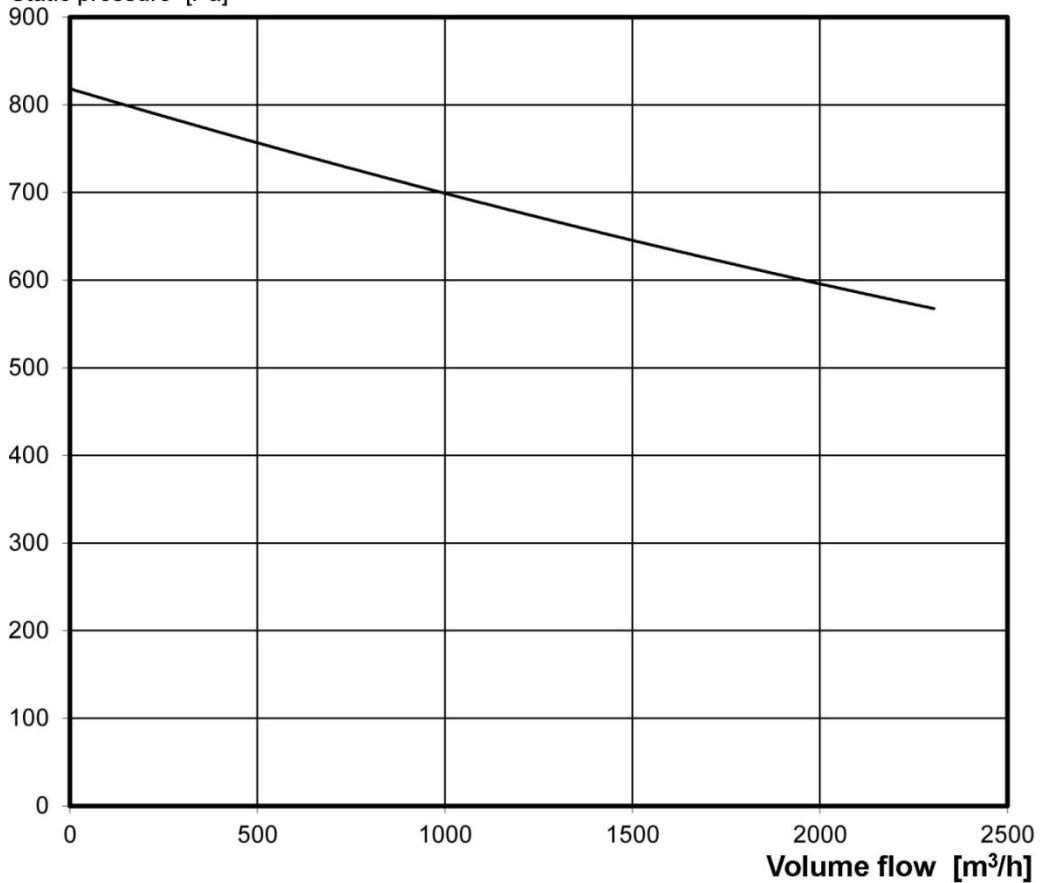
### CAUTION:

1. Supply voltage: 3x400V,
2. Ingress protection: IP54 (referred to the motor only).



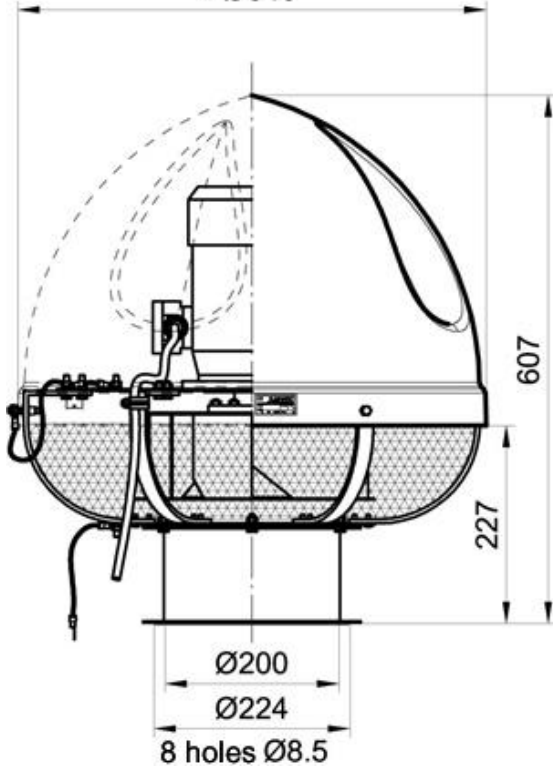
**Flow chart – SPARK-S-160/Ex**

Static pressure [Pa]



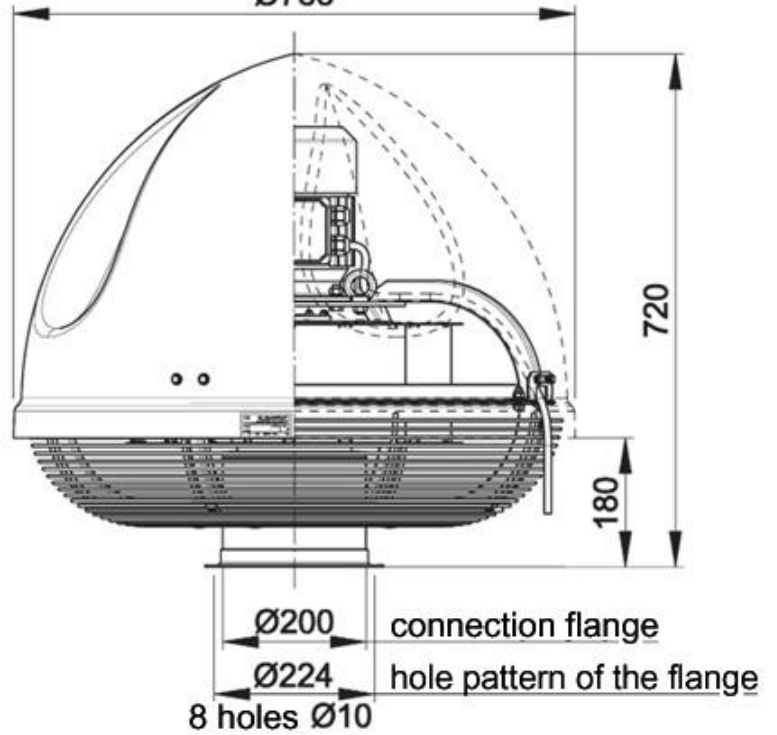
**SPARK-S-200/3000/Ex**

~Ø540



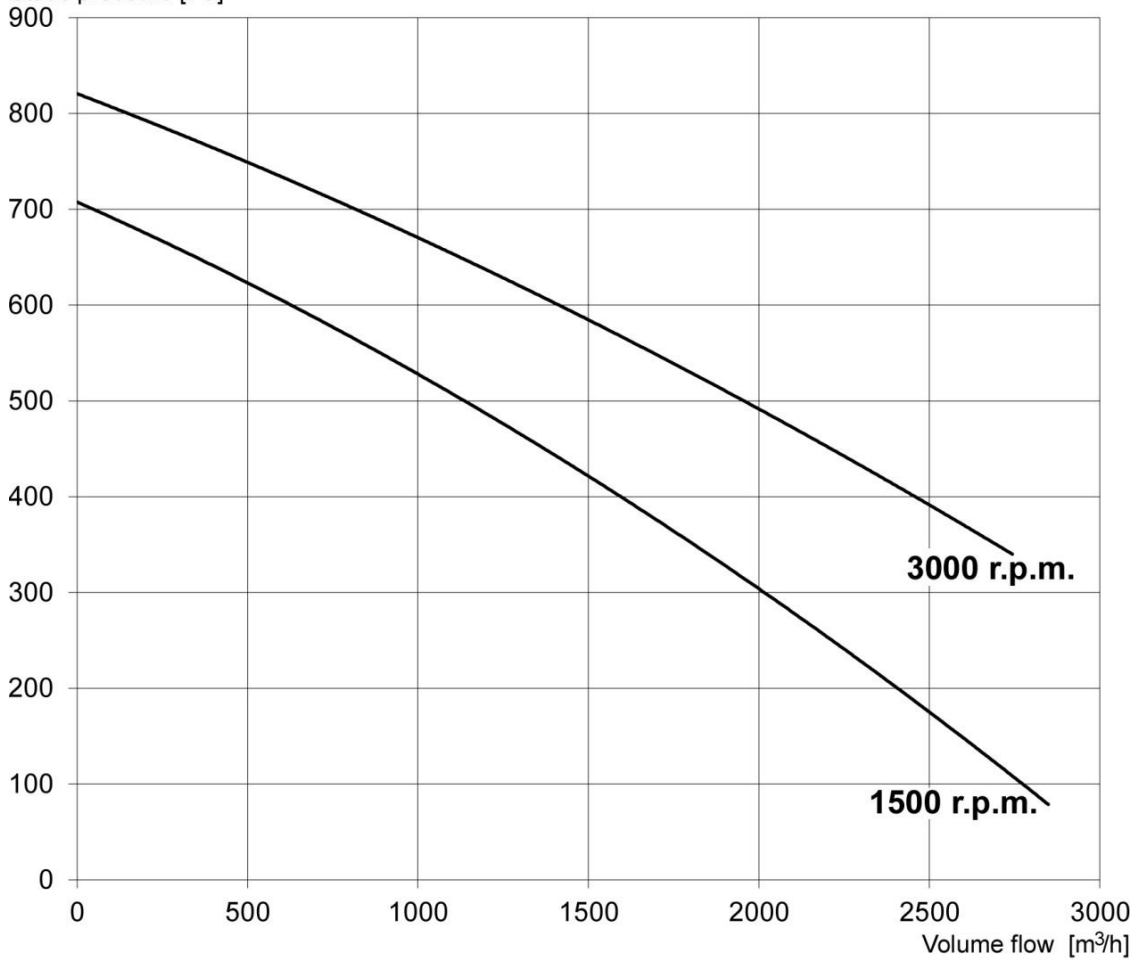
**SPARK-S-200/1500/Ex**

Ø785

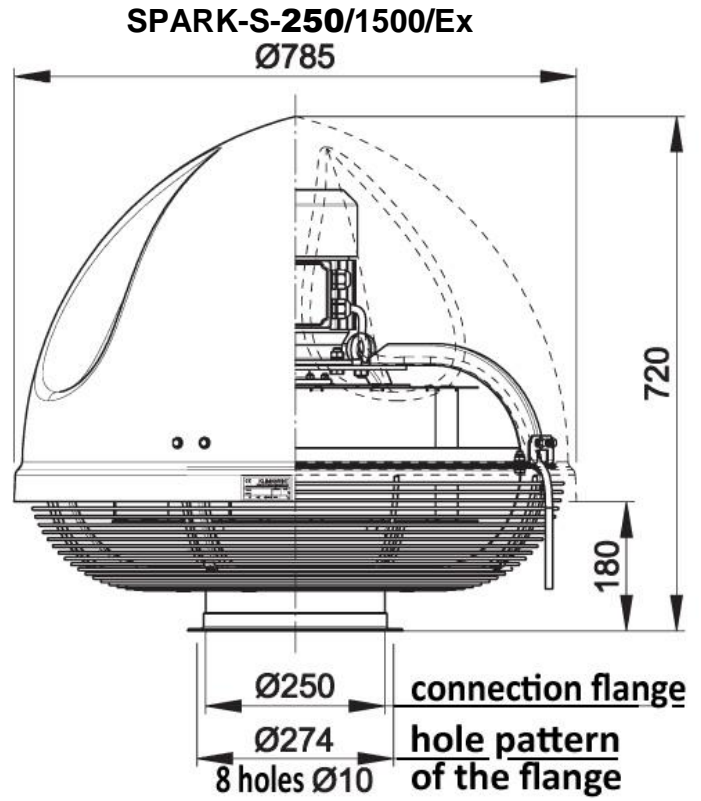
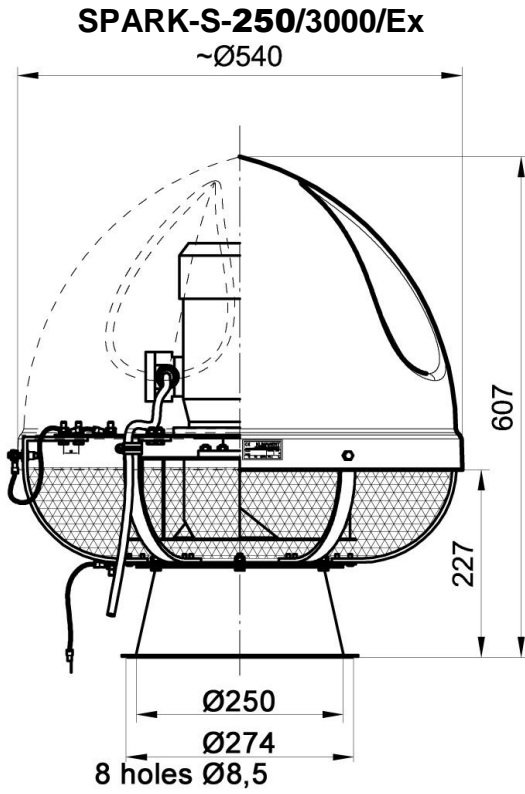


**Flow chart – SPARK-S-200/Ex**

Static pressure [Pa]

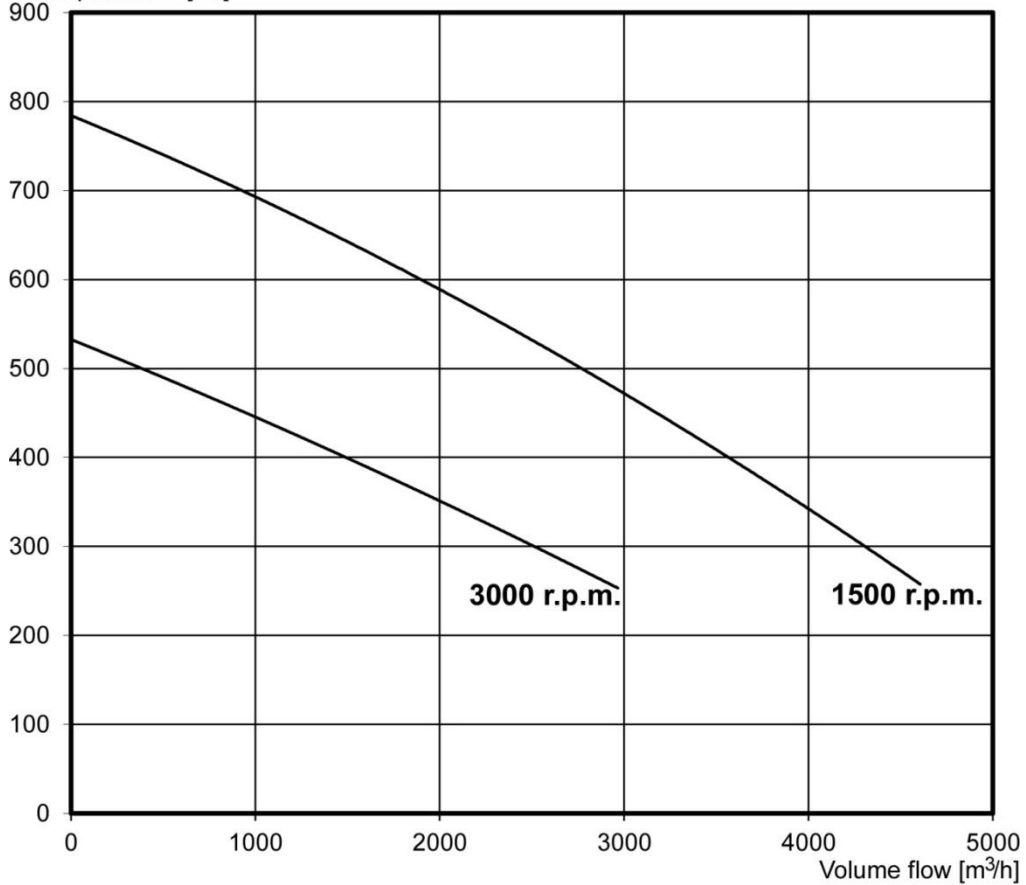






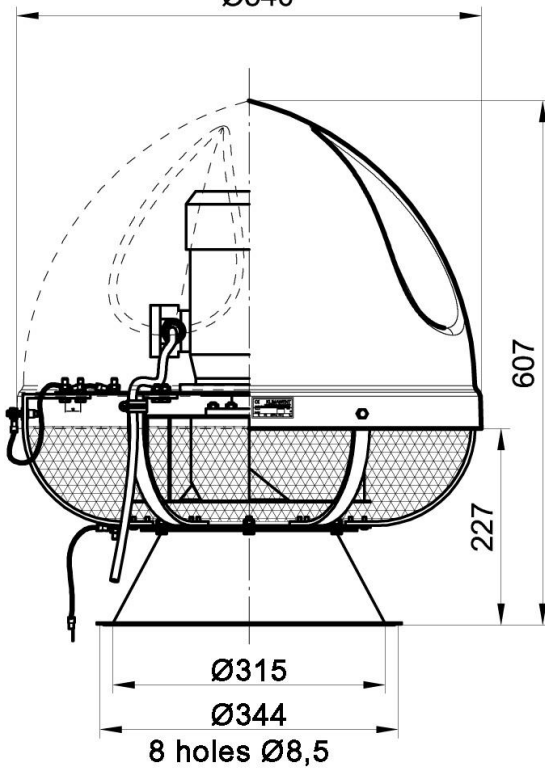
### Flow charts – SPARK-S-250/Ex

Static pressure [Pa]



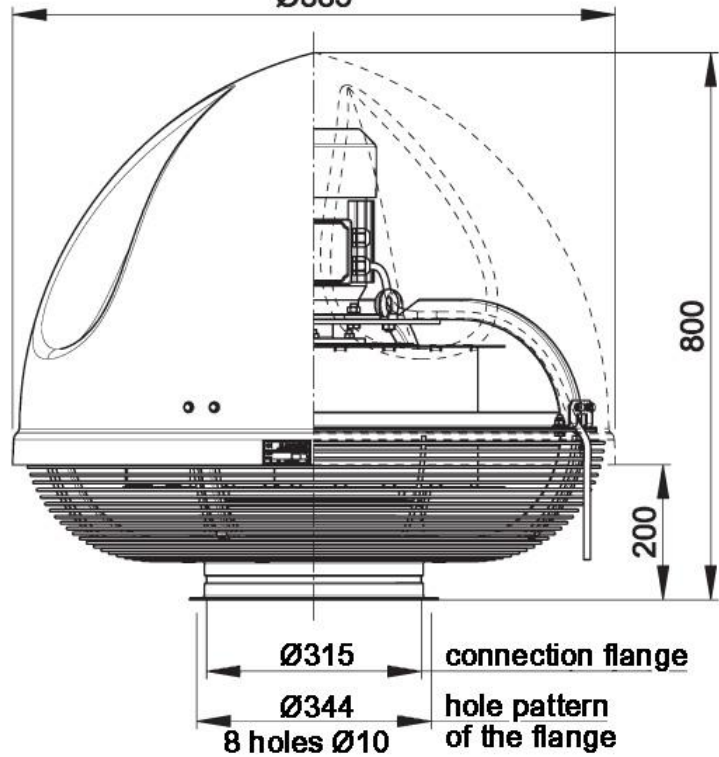
**SPARK-S-315/3000/Ex**

~Ø540



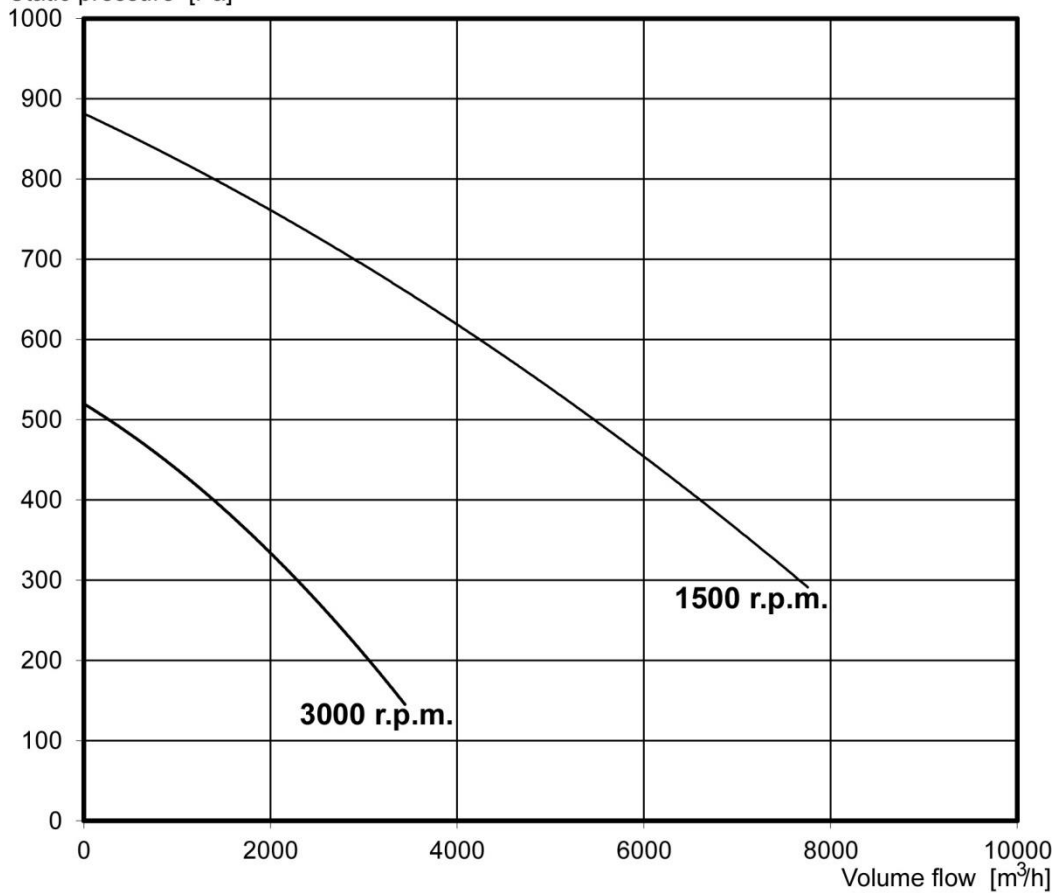
**SPARK-S-315/1500/Ex**

Ø885

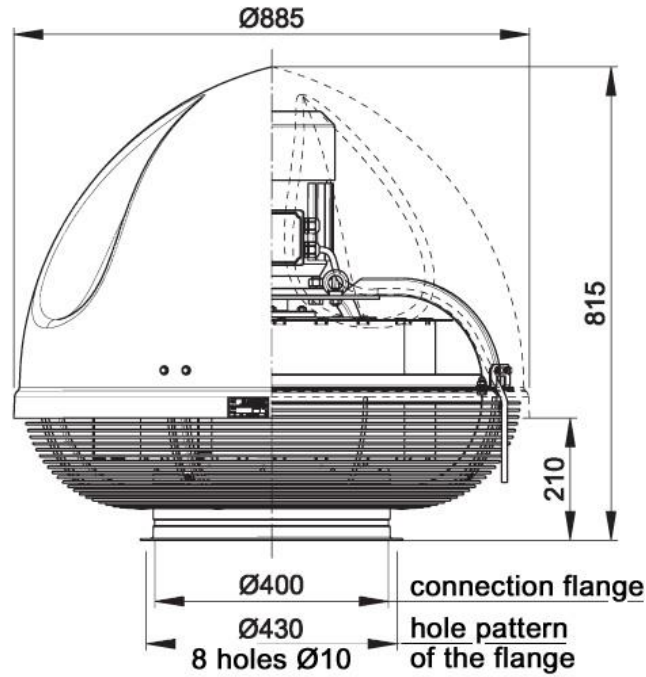


**Flow charts – SPARK-S-315/Ex**

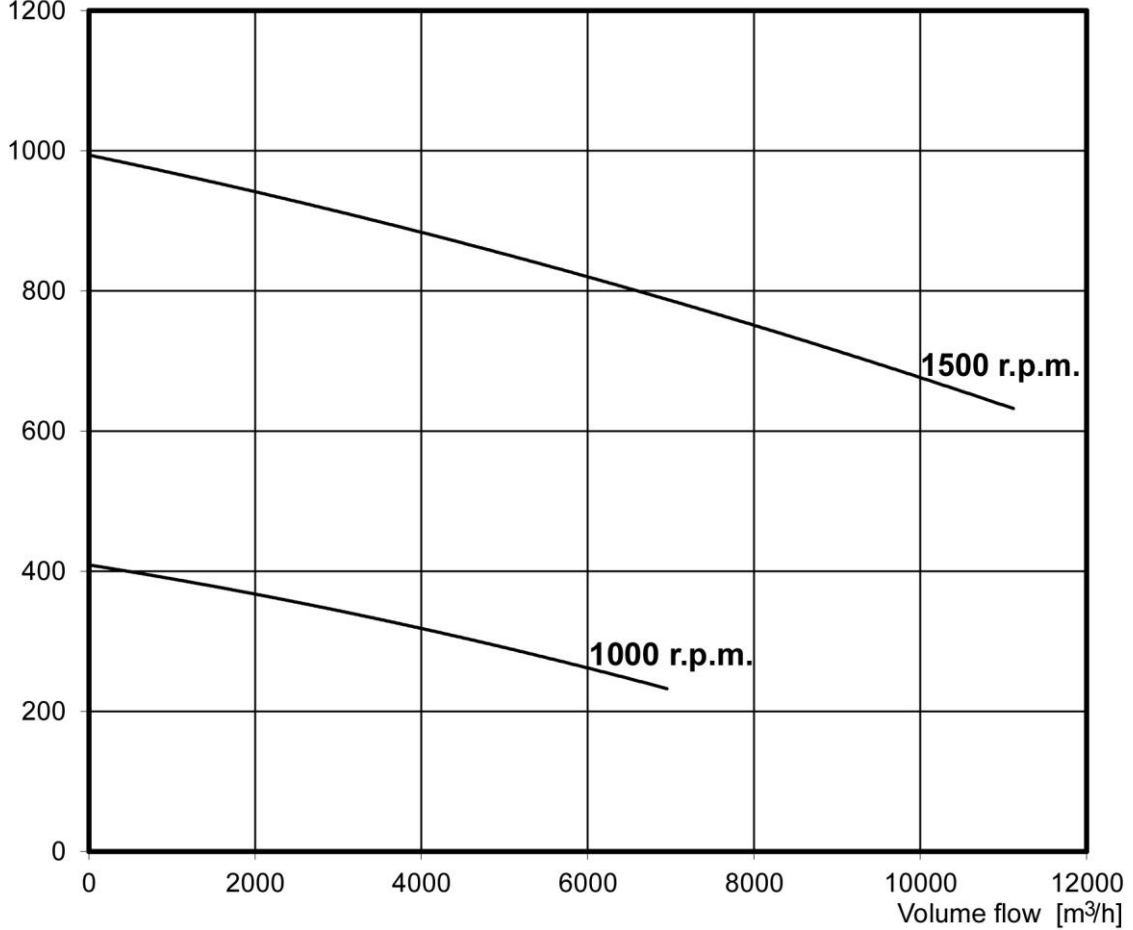
Static pressure [Pa]



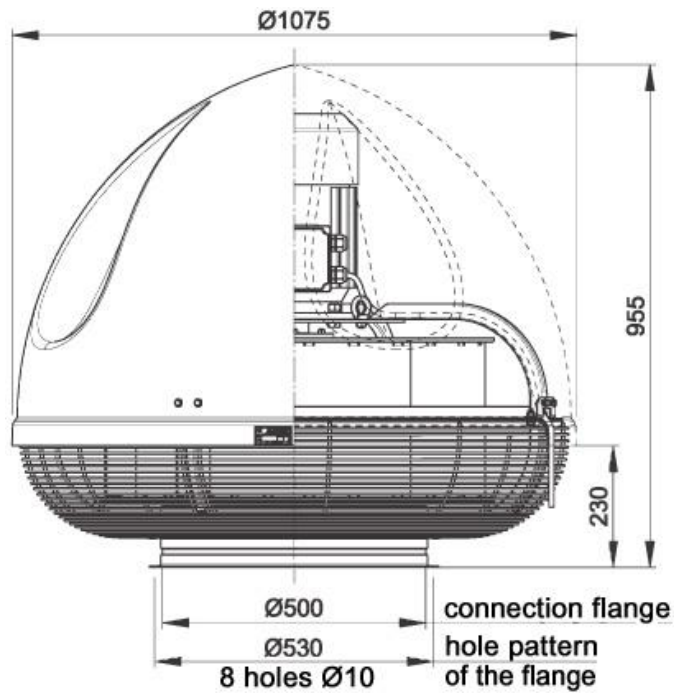


**SPARK-S-400/1500/Ex**  
**SPARK-S-400/1000/Ex**

**Flow charts – SPARK-S-400/Ex**

Static pressure [Pa]

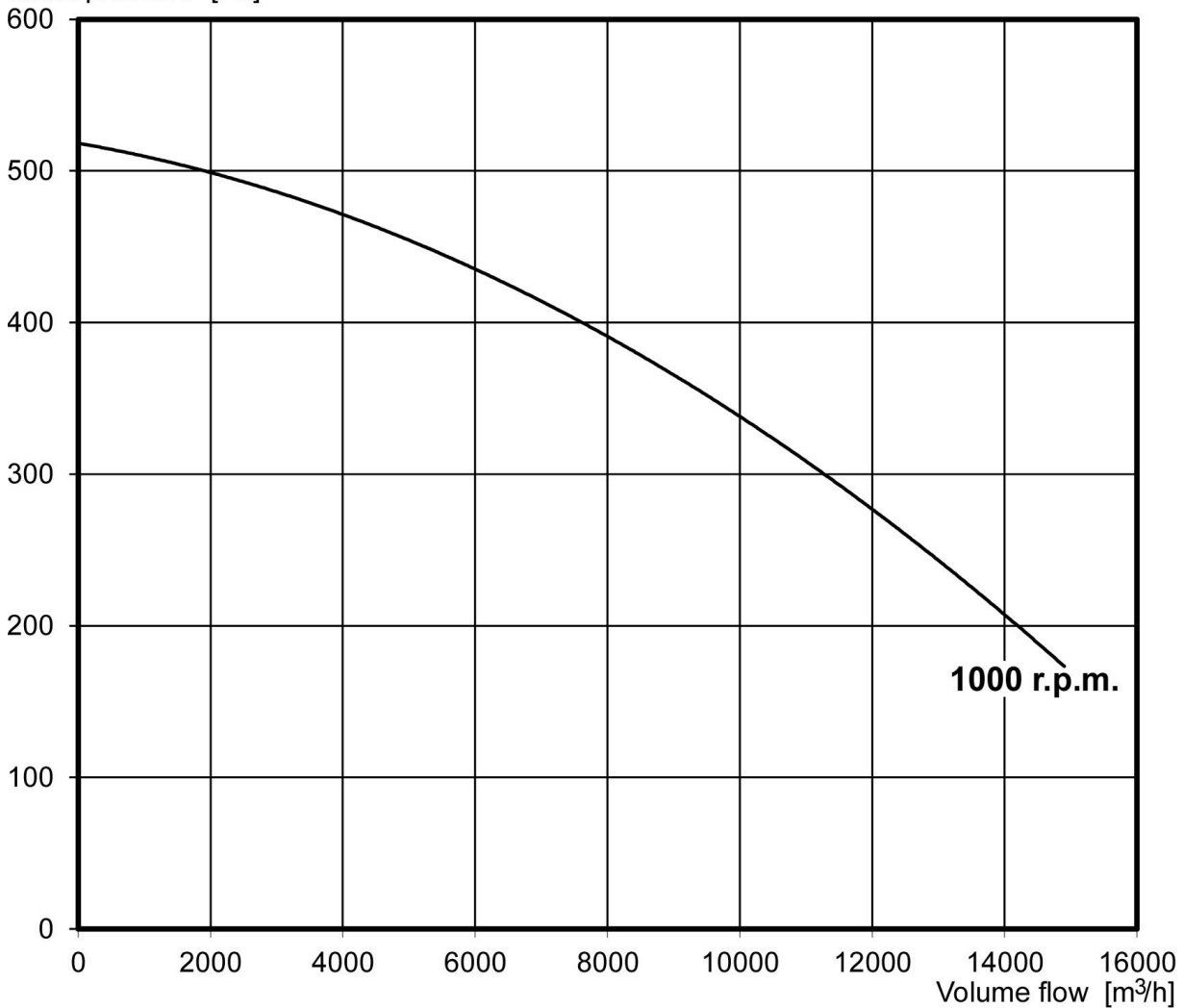


**SPARK-S-500/1000/Ex**

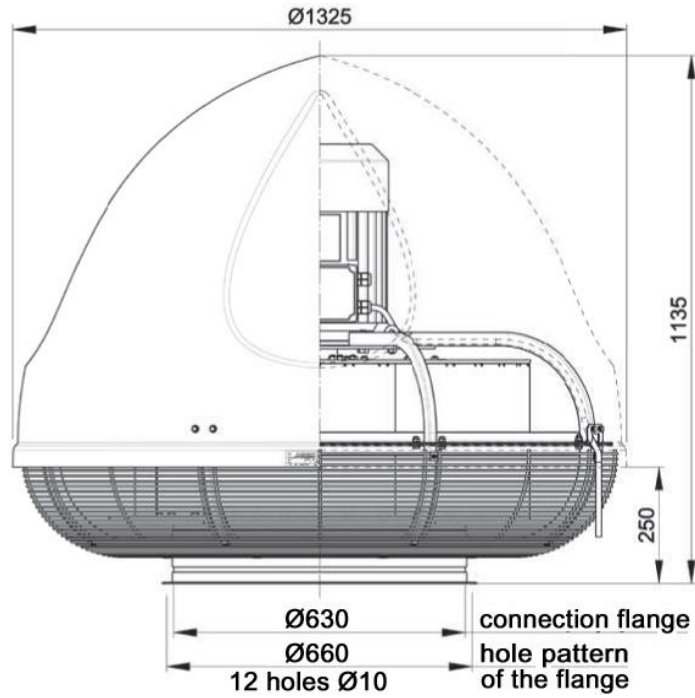


**Flow chart – SPARK-S-500/1000/Ex**

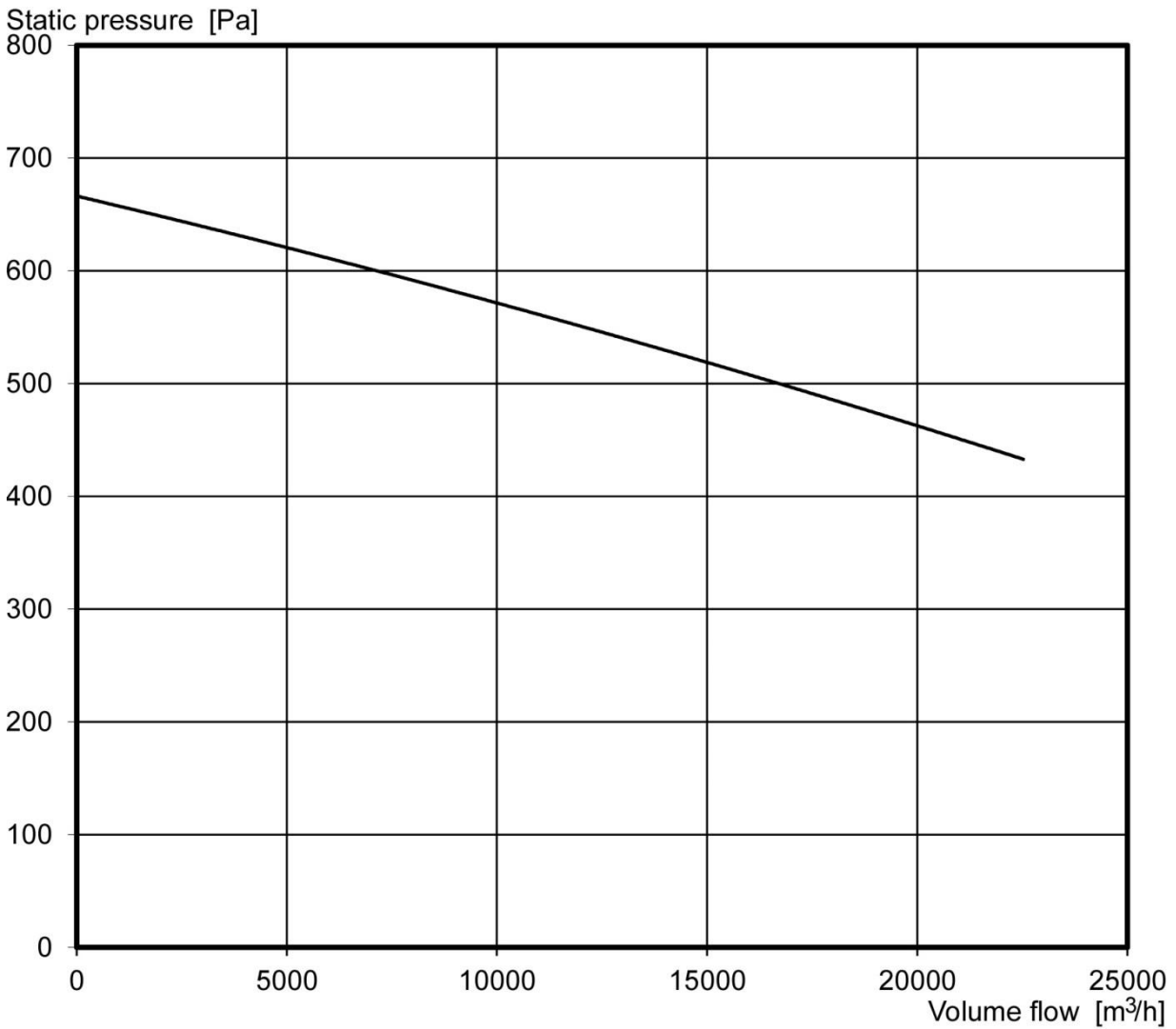
Static pressure [Pa]



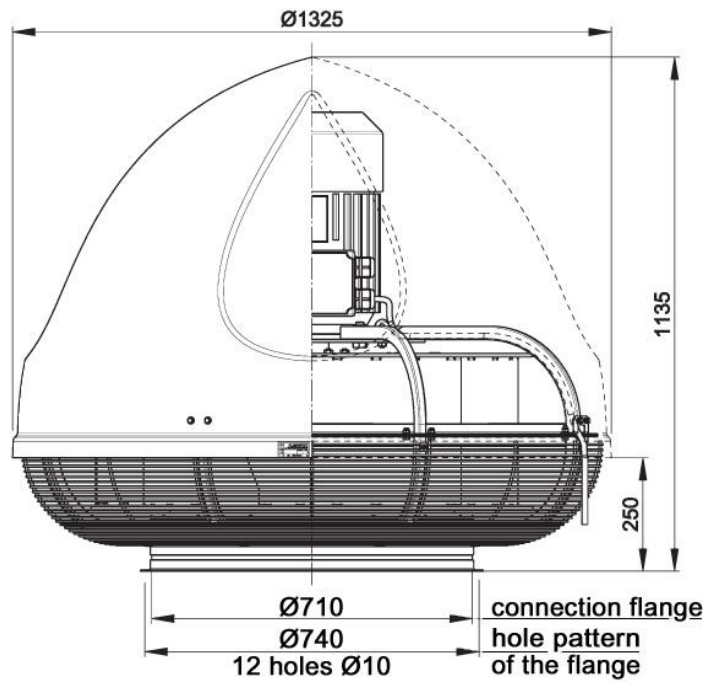
**SPARK-S-630/1000/Ex**



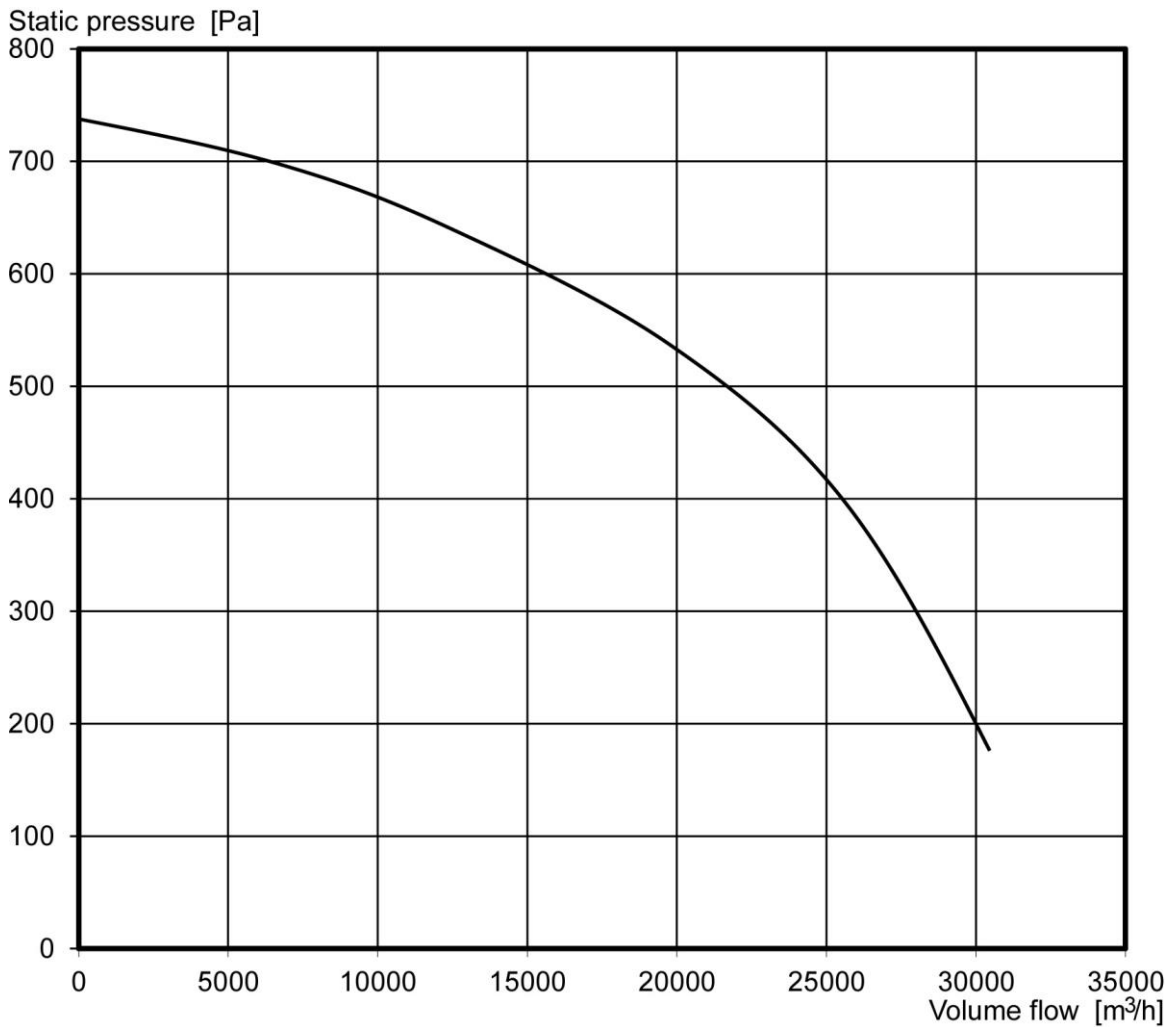
**Flow chart – SPARK-S-630/1000/Ex**

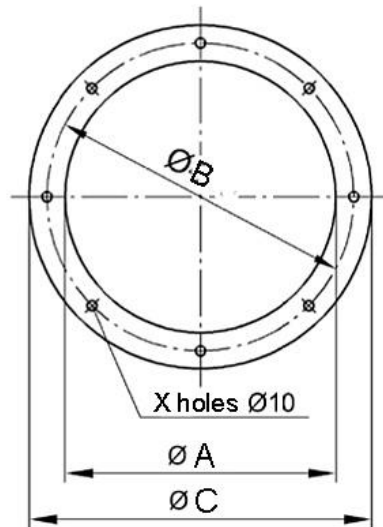


**SPARK-S-710/1000/Ex**

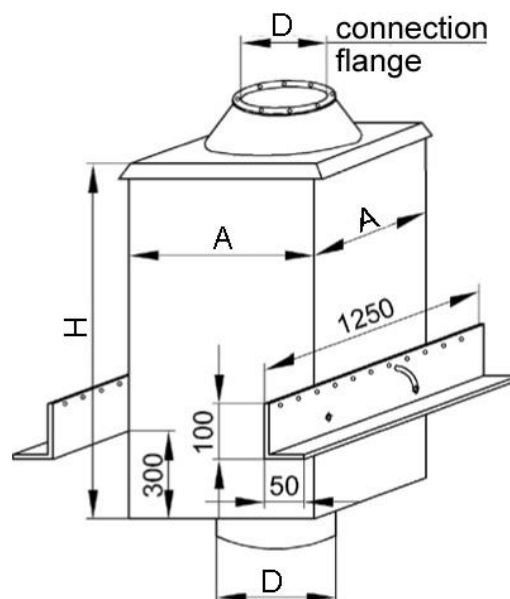


**Flow chart – SPARK-S-710/1000/Ex**



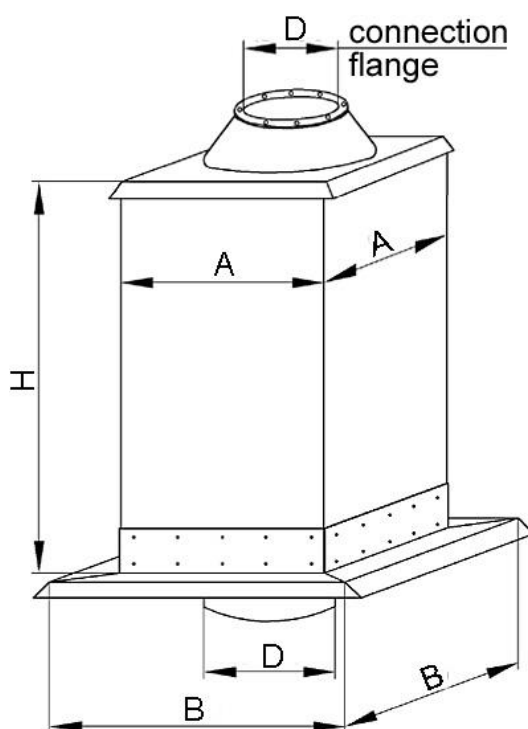
**Connection flange**


Type of the fan	Connection flange			
	ØA [mm]	ØB [mm]	ØC [mm]	X [pcs] Ø10
SPARK-S-160/Ex	160	194	218	6
SPARK-S-200/Ex	200	224	250	8
SPARK-S-250/Ex	250	274	300	8
SPARK-S-315/Ex	315	344	365	8
SPARK-S-400/Ex	400	430	450	8
SPARK-S-500/Ex	500	530	550	8
SPARK-S-630/Ex	630	660	680	12
SPARK-S-710/Ex	710	740	760	12

**Sound-absorbing roof base  
TPD-...-N**


Type of the fan	Sound-absorbing roof base				
	Type	D [mm]	A [mm]	H [mm]	weight [kg]
SPARK-S-160/Ex	TPD-160-N	Ø160	430	625	28
SPARK-S-200/Ex	TPD-200-N	Ø200	430	625	28
SPARK-S-250/Ex	TPD-250-N	Ø315	530	950	41
SPARK-S-315/Ex	TPD-315-N	Ø400	530	950	41
SPARK-S-400/Ex	TPD-400-N	Ø430	790	1200	75
SPARK-S-500/Ex	TPD-500-N	Ø500	790	1200	75
SPARK-S-630/Ex	TPD-630-N	Ø630	890	1200	88
SPARK-S-710/Ex	TPD-710-N	Ø710	890	1200	88

Sound-absorbing roof base  
TPDC-...-N



Type of the fan	Sound-absorbing roof base					
	Type	D [mm]	A [mm]	B [mm]	H [mm]	weight [kg]
SPARK-S-160/Ex	TPDC-160-N	160	430	630	625	30
SPARK-S-200/Ex	TPDC-200-N	200	430	630	625	30
SPARK-S-250/Ex	TPDC-250-N	315	530	730	950	46
SPARK-S-315/Ex	TPDC-315-N	400	530	730	950	46
SPARK-S-400/Ex	TPDC-400-N	430	790	990	1200	84
SPARK-S-500/Ex	TPDC-500-N	500	790	990	1200	84
SPARK-S-630/Ex	TPDC-630-N	630	890	1090	1200	100
SPARK-S-710/Ex	TPDC-710-N	710	890	1090	1200	100



## 5. Structure and Function

The SPARK-S/Ex series of fans features original construction of bent steel profiles forming a streamline and very robust structure. Inside is located an Ex-execution motor with a radial impeller (directly mounted on the motor shaft). The impeller is statically and dynamically balanced according to ISO 14694:2003+ADM1:2010, carrying the G 6,3 class.

The lower skeletons of the fans of synchronous rotations 3000 r.p.m. are surrounded with a circumferential grid, where the air is discharged through. The other fans types feature lower skeleton constructed of steel rods.

An antistatic plastic hood (as upper structure) protects the fan from weather conditions. The fan has to be mounted on a roof base.

We recommend sound absorbing roof base TPD-N or TPDC-N of suitable size, adapted to the given fan (see Section 4) – delivery on separate order.

## 6. Assembly and Start-up

In the course of installing the fan on the roof (of the industrial building), it is important to mount it on a pedestal with adequate roof base.

**We recommend applying TPD-N or TPDC-N sound absorbing roof bases (delivery on separate order – for their dimensions see Section 4 “Roof bases”).** Application of the roof bases reduces the noise level (perceptible in the process room) by 12 – 18 dB(A). In order to reduce further the noise level, a silencer can be suspended underneath the roof base, inside the room.

For transporting the fan, use special transport handles at the roof base, (screwed up to the disc underneath the motor). Before that, take off the fan hood. **Do not use for transporting the eye bolt of the motor!**

Having placed the fan on the roof base, screw up accurately all the screws, between the fan connecting flange and the roof base. Finally re-install the hood.

**During the vertical transport and positioning the fan at the site of operation, handle with care, as the impeller is unprotected (not covered with hood).**

Connection to the power supply system ought to be carried out by User on one's own.



**Connection to the power supply ought to be executed by an authorised person with confirmed qualifications, according to the valid regulations.**

**Necessarily, select the suitable sort and section of the supply cable and appropriate protection against the short-circuit- and overload effects, according to the local conditions.**

Connect the motor, according to the data on the nominal plate of the motor, and strictly after the connection diagram placed on the connection box cover (of the motor of Ex-execution), (see Fig. No.1a and 1b).

**Prior the fan start-up check subsequent aspects:**

- nominal supply voltage of the circuit and of the motor,
- stability and correctness of connection with the PE protective cable,
- correctness of protections installed within the power supply system.



**Upon first start-up, examine the impeller rotation sense – this must be according to the arrow on the fan housing. When it is inversed, change the phase connection sequence.**

**Do not start the fan (even for a test run) before the protective hood is installed.**

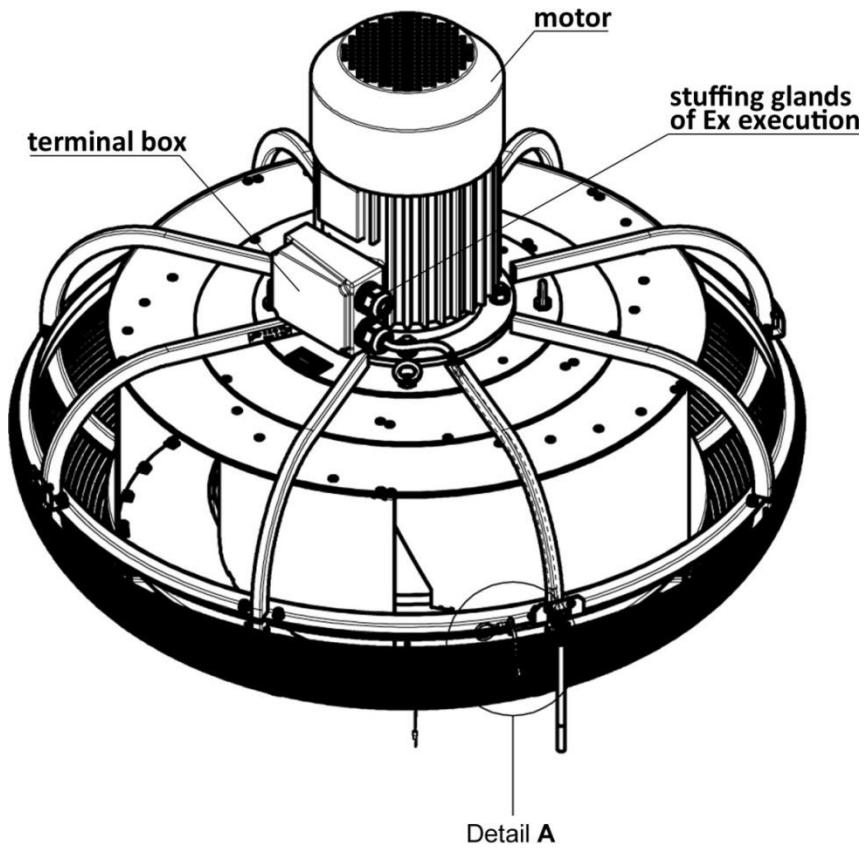
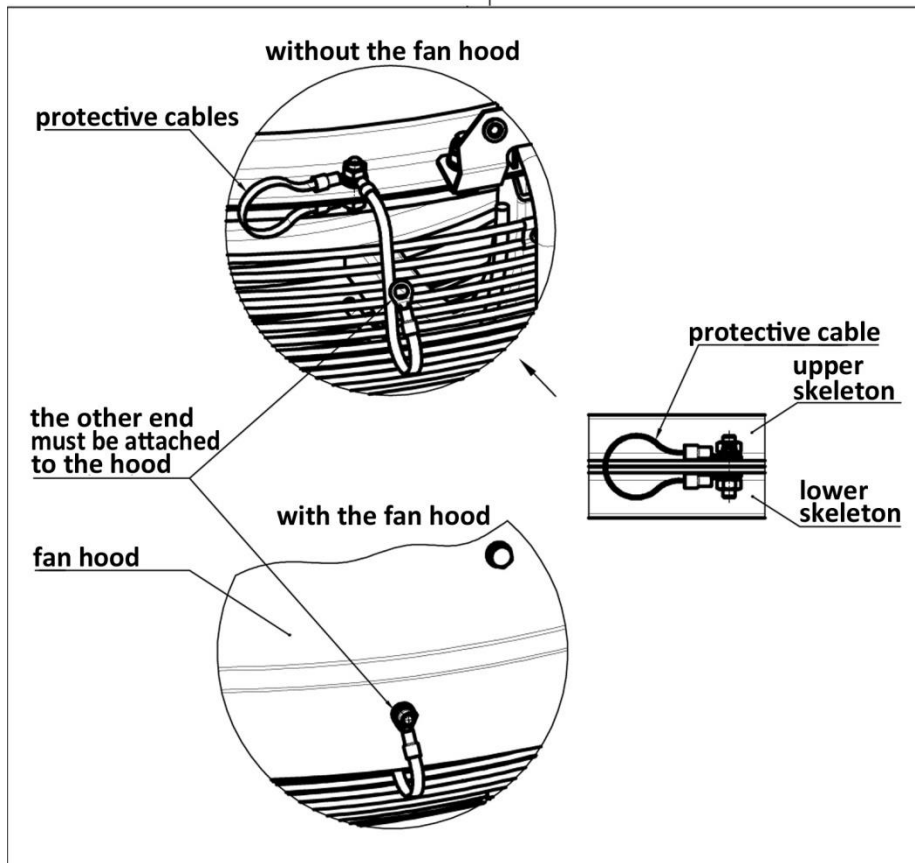


Fig. No.1a

Detail A



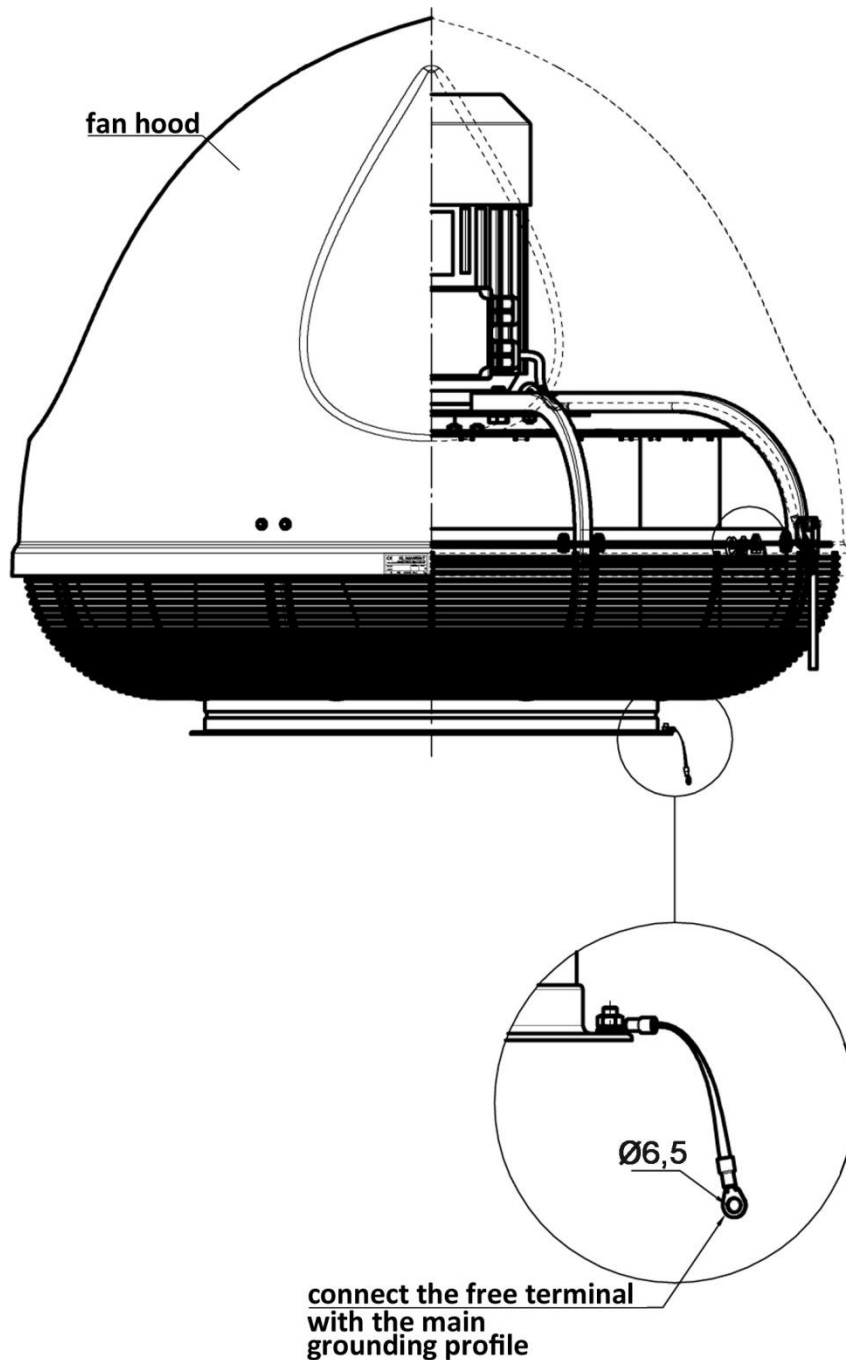


Fig. No.1b

## 7. Operational Use

In general, the construction and a solid execution of the fan, guarantees its operational use without constant everyday maintenance.

**Following use of the fan is treated as incorrect:**

- a/ conveying the media of temperature exceeding the admissible the temperatures, as stated in the Section 2,
- b/ conveying the aggressive and viscous media,
- c/ conveying the media of high dustiness.

**Consequences of incorrect use:**

- breakage of bearings,
- balance loss of the rotary elements,
- vibrations,
- deformations,
- damages caused by friction.

In case when any defective device function is detected (e.g. increased noise level, vibrations, reduced flow efficiency), it is important to disconnect the fan from the power supply, and to undertake its technical revision in order to reveal the reason of the functional disturbance.

Typical disturbances and their reasons are exposed in the Section 8.



In case of every repair or spare part replacement (according to ATEX Directive it is important to apply an adequate information on an additional plate or in the enclosed documentation (a register log of repair activities, etc.). This is the duty of User!

## 8. Troubleshooting Guide

Table No.2

	Problem	Possible reason	Corrective action
1.	It is not possible to switch on the fan.	Fade of one of the phases or low voltage.	Adjust to gain the correct voltage. Check the protections.
		The impeller is rubbing at the housing or an object got stuck inside the fan.	Examine the reason of friction, remove the disturbing object, replace or repair the damaged part.
2.	Sudden vibrations of the fan occur.	Obstacle objects got stuck in the impeller.	Disconnect the fan from the power system, take off the protective hood and remove the obstacle.
		Failure of the impeller.	Replace the impeller for new.
		Impurities deposited on the impeller	Clean the impeller.
		Some parts are rubbing upon each other.	Check the reason of friction and replace the deformed parts
		Mounting bolts of the impeller got released/slack.	Tighten up the loose mounting bolts.
		Motor failure (bearing wear out etc.)	Replace the motor for new.
3.	The protective block got activated.	Incorrect protection settings.	Carry out the correction to obtain appropriate settings of the current protection.
		The motor is overloaded.	Check the "star-delta" connection and the time of start-up.
		Incorrect cross-sections of the power supply cables.	Connect correct cables.

## 9. Maintenance

To obtain correct functional performances and to meet the safety rules, **it is recommended submit the fan to technical revision in regular periods of time.** During the revision take into account the function of the device as well as the technical state of its elements.



**Technical revisions on the fan must be executed by a qualified person with adequate authorization. Additionally, the fan necessarily should be disconnected from the power supply system.**

During the technical revisions, follow the recommendations and instructions included in the User's Manual of the motor, that constitute integral part of the main User's Manual of the fan.

**Within the scope of technical revision carry out following steps:**

- examine and tighten up the mechanical- and electrical connections,
- check the mounting of the motor and fan, mind that the clearance between the inlet fitting piece and the impeller is equalised in the whole circumference,
- **remove the impurities (deposited inside the fan) and eventually the pollutants originating from the conveyed medium.**

**Before any activities carried out on the fan it is important to:**

- **disconnect the fan from the power supply system,**
- wait until the impeller stops rotating,
- take off the protective hood.

**Prior to the re-start of the fan** carry out the revision steps listed in Section 6 "Assembly and Start up" of the present Use and Maintenance Manual.

**Exemption from this** are tests that need to be carried out on the device being in run, along with strictly followed safety regulations – (example: measurement of vibrations). In the course of the revision activities, it is important to follow the safety regulations – otherwise the personnel/User can be at risk. The construction of the fan guarantees its operational use without constant, everyday maintenance service.

## 10. Occupational Health and Safety

**Start-up and the operational use of the fan are admissible after getting acquainted with the contents of the present Use and Maintenance Manual.** The fan shall not cause any hazard under the condition it is correctly and firmly installed on the roof base or other structural element of the building.

Any installation activities related to the power supply system, have to be carried out strictly according to the enclosed Connection Diagram and in accordance with the instructions given in Section 6 of the present Use and Maintenance Manual.



**Connection to the power supply system ought to be carried out by an authorised person with qualifications, according to the being in force regulations.**

In the course of operational use, examine the fan connection to the PE protective cable.



**Any revision activity and repair must be executed after the fan is disconnected from the power supply system.**

**Approaching with "loose garment/clothing" or putting the hand towards the open inlet of the running fan can cause hazard of accident and severe disability.**

## 11. Transport and Storage

The fans have to be transported on pallets and protected with foil. During loading and transporting, the fans should not be thrown neither knocked down. Do not put any additional load on its top.

It is inadmissible to put one device on top of another (no stacking). During the transport, protect the devices from atmospheric factors (weather conditions) and from mechanical damage.

The vertical transport to the site of use (roof of the building) has to be carried out after the hood is taken off. For this purpose connect the carrying lines to the transport eyes.

Handle with care, as **the impeller is not protected by hood (uncovered)**. The device should be stored in dry rooms of proper ventilation.

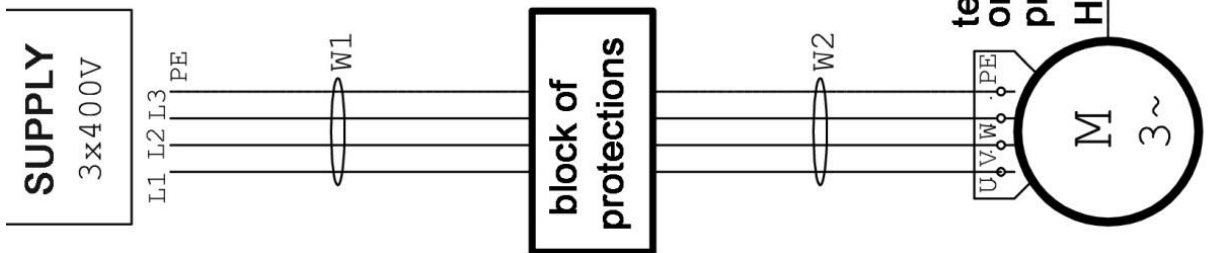
## 12. Terms of warranty

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

- mechanical damages and malfunctions caused by User,
- device failures caused during use which was in contradiction with the purpose of application and with the present Use and Maintenance Manual,
- any damages being caused during improper transport, storage or incorrect maintenance.

Infringement of the Clause G 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.





Fan	Motor type of company BESEL	Motor rate /kW/	Cable W1; W2
Spark-S-160/3000Ex	Ex II 2G ExeT3 SKh 71-2B	0,55	H07RN-F4G1,5
Spark-S-200/3000Ex	Ex II 2G ExeT3 SKh 71-2B	0,55	H07RN-F4G1,5
Spark-S-200/1500Ex	Ex II 2G ExeT3 SKh 80-4A	0,55	H07RN-F4G1,5
Spark-S-250/3000Ex	Ex II 2G ExeT3 SKh 71-2B	0,55	H07RN-F4G1,5
Spark-S-250/1500Ex	Ex II 2G ExeT3 SKh 90S-4	1,1	H07RN-F4G1,5
Spark-S-315/3000Ex	Ex II 2G ExeT3 SKh 71-2B	0,55	H07RN-F4G1,5
Spark-S-315/1500Ex	Ex II 2G ExeT3 SKh 90L-4	1,5	H07RN-F4G1,5
Spark-S-400/1500Ex	Ex II 2G ExeT3 SKh 100L-4B	3,0	H07RN-F4G1,5
Spark-S-400/1000Ex	Ex II 2G ExeT3 SKh 90S-6	0,75	H07RN-F4G1,5
Spark-S-500/1000Ex	Ex II 2G ExeT3 SKh 112M-6	2,2	H07RN-F4G1,5
Spark-S-630/1000Ex	Ex II 2G ExeT3 SKh 132M-6B	5,5	H07RN-F4G2,5
Spark-S-710/1000Ex	Ex II 2G ExeT3 SKh 160M-6	7,5	H07RN-F4G2,5

**CAUTION:**

1. Supply voltage 3x400V; 50Hz
2. Continuous work S1
3. Ingress protection IP54
4. Ambient temperature from  $-20^{\circ}\text{C}$  up to  $+40^{\circ}\text{C}$
5. Insulation class F
6. Connect the protective cable H05V-K1G4 ended with terminals KOI6/6 PC with the housing / see Section 6;
7. Dwg No.1a; Dwg No.1b / length 145mm.

Length of the cable -- from the fan -- 3 metres

The motor windings must be connected according to the Nominal Data Plate of the motor and after the Connection Diagram on the terminal box cover.

Connection Diagram of the motor  
SPARK-S/Ex

## 13. Sample of the Declaration of Conformity

### Declaration of conformity EC No. ....

Manufacturer (eventually the authorized representative / importer):

name: **KLIMAWENT S.A.**

address: **81-571 Gdynia, Chwaszczyńska 194**

A person, authorized for issuing the technical documentation: Teodor Świrbutowicz, KLIMAWENT S.A.

hereby declares that the appliance:

name: **Explosion-proof roof fans**

type/model: **SPARK-S/Ex**

serial number: ..... year of production: .....

meets the requirements of the subsequent European Directives:

- **2006/42/EC Machinery Directive** of the European Parliament and of the Council of May 17<sup>th</sup>, 2006 on machinery – amending the 95/16/EC (recast) / *Journal of Laws EC L157 of 09.06.2006, page 24*
- **2014/35/EC Directive** of the European Parliament and of the Council of February 26<sup>th</sup>, 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. / *Journal of Laws EC L96 of 29.03.2014*
- **2014/34/EC ATEX Directive** of the European Parliament and of the Council of February 26<sup>th</sup>, 2014 on the harmonisation of the laws of Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres. / *Journal of Laws EC L96 of 29.03.2014*

The appliance meets following harmonized standard:

- **EN ISO-12100:2012** – “Safety of machinery – Basic concepts, general principles for design. Hazard assessment and risk reduction”.
- **EN 60204-1:2018-12** – “Safety of machinery – Electrical equipment of machines. Part 1: General requirements”.
- **EN ISO 13857:2010** – “Safety of machinery – Safe distances to prevent hazard zones from being reached by upper and lower limbs”.
- **EN 80079-0:2013/A11:2014** – “Electrical appliances in areas of gas explosion risk. Part 0: General requirements”.
- **EN 60079-7:2016-02** – “Electrical appliances for areas of gas explosion hazard. Part 7: Increased safety construction “e”.
- **EN 1127-1:2011** – “Explosive atmospheres – Explosion prevention and protection. Basic terminology and methodology”.
- **EN ISO 80079-36:2016-07** – “Explosive atmospheres – Part 36: Non-electrical equipment for explosive atmospheres. Methodology and requirements.
- **EN ISO 80079-37:2016-07** – “Explosive atmospheres – Part 37: Non-electrical equipment for explosive atmospheres. Non-electrical types of protection. Constructional safety “c”, supervised ignition “b”, immersion in a liquid “k”.
- **EN 14986:2017-02** – “Designing of fans applied in areas of explosion hazard”
- **ISO 14694:2003+AMD1:2010** – “Industrial fans – Guidelines on the quality of balancing and the vibration level.
- **ISO 14695:2008/AC:2017-10** – “Industrial fans – Methods of measurements of vibration of fans.

The appliance is marked on the nominal data plate:



**II 2 G c Ex e II T3**

place, date

**KLIMAWENT S.A.**  
**Supported Employment Enterprise**  
 81-571 Gdynia, ul. Chwaszczyńska 194  
 phone: +49 58 829 64 80  
 email: [klimawent@klimawent.com.pl](mailto:klimawent@klimawent.com.pl)  
[www.klimawent.com.pl](http://www.klimawent.com.pl)

signature of authorised person

District Court Gdańsk-Północ  
 in Gdańsk, VII Wydział Gospodarczy  
 of the National Register of Court  
 KRS 0000308902 company stock  
 13.779.200 zł paid in total

name, surname, function  
 of the signatory

NIP: 958 159 21 35  
 REGON: 220631262  
 Bank Account: **Santander Bank Polska S.A.**  
 56 1500 1025 1210 2007 8845 0000

NOTES:

NOTES: