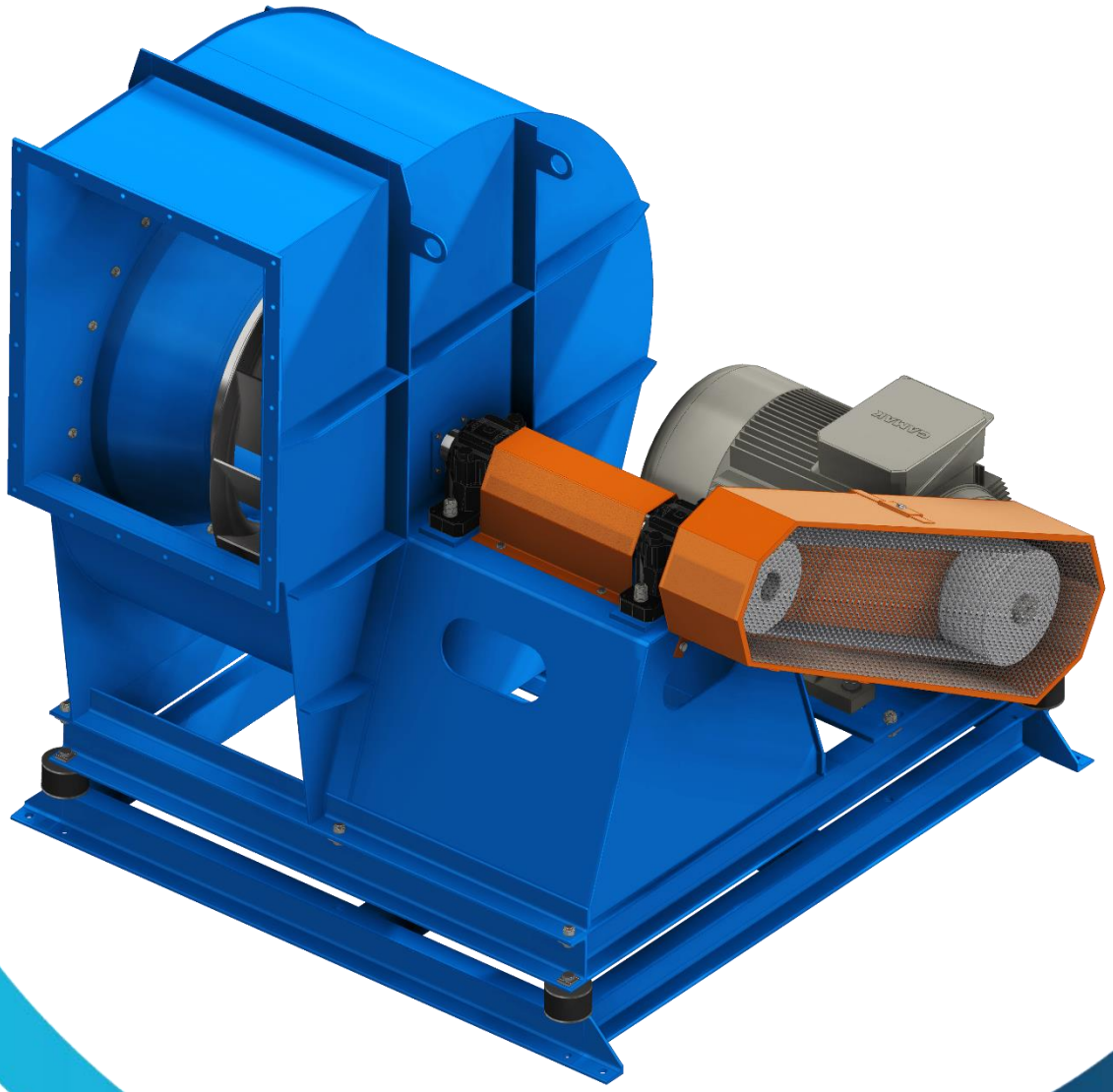
CENTRIFUGAL FAN

OPERATING and MAINTENANCE INSTRUCTIONS



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ED-VAN VANTİLATÖR

1.INTRODUCTION

ED_VAN provides services in solving any and all kinds of de-dusting and industrial type ventilation problems with its specialised technical staff. Our company is established over an area of 19.500 m^2 and has been operating in an indoor area of 8.000 m^2 since 1975.

Used in each and every area of industry, the **ED_VAN** products are manufactured in consideration of the protection of consumer principle by the national and international standards. Design, project and production of any kinds of products as manufactured by our company are carried out at its own production facilities by its own staff.

Our R&D department continuously follow up any technological developments without sacrificing our quality. Tests are performed on the fans at our Edremit factory in the light of technological developments. Results and diagrams resulting from such tests are available with our company and delivered to our customers upon request. Quality controls are carried out at every stage both prior to production and shipment, thus identifying and controlling any and all problems which may occur in our products.

WE herewith declared that our products are manufactured to satisfy the requirements of
-CE,
-TSE,
-ATEX,
-OHSAS 18001,
-ISO 9001:2008,
-ISO 14001:2015.



WARNINGS:

Your strict compliance with the operating and maintenance instructions will ensure trouble-free operation in your entity.

2.SAFETY PRECAUTIONS

- Fan system instructions are followed up by well trained and experienced staff members.
- Safety precautions must be checked.
- Electrical systems must be checked.
- Copper plate must be touched by bare hand before starting operation.
- Make sure that the maintenance covers are closed.
- Check whether or not there is any sound, vibration or extraordinary condition after starting.
- Power consumption must be checked. Maximum power must not exceed the permitted one.



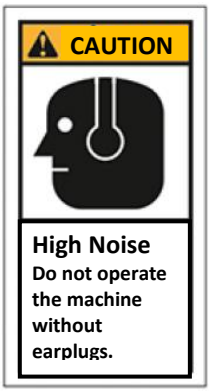


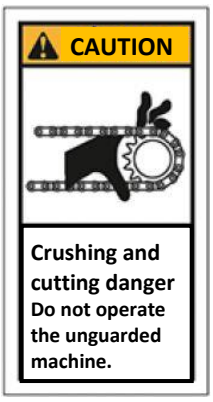




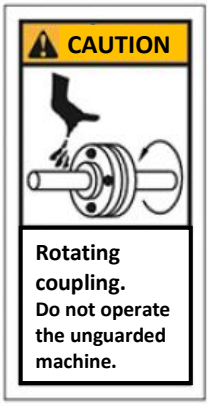










EDVAN VENTİLASYON

3.WARRANTY



- Our products are under warranty against material and manufacturing defects for a period of **1 year** as from the invoice date, except motor failures, wears and misuses.
- For overseas sales, material supply (EXW) is under warranty and servicing will be separately charged.
- Warranty period continues provided that the delivered products are used and commissioned not later than 120 days. Otherwise, any failures which may arise from standby will be excluded from warranty.
- Issues not guaranteed by the seller:

(a) Defects occurring due to failure to provide a proper installation environment for the product;

(b) Damages caused by failure to use the product for any purposes other than for intended use;

(c) Damaged arising from such natural events as fire, flood, storm and thunderbolt;

(d) Damages caused by unauthorised additions and modifications;

(e) Any kind of misuse and/or abuse by user, including improper installation;

(f) Products damaged or modified by buyer and/or its customers; or

(g) Performance problems caused by any incorrect data given.

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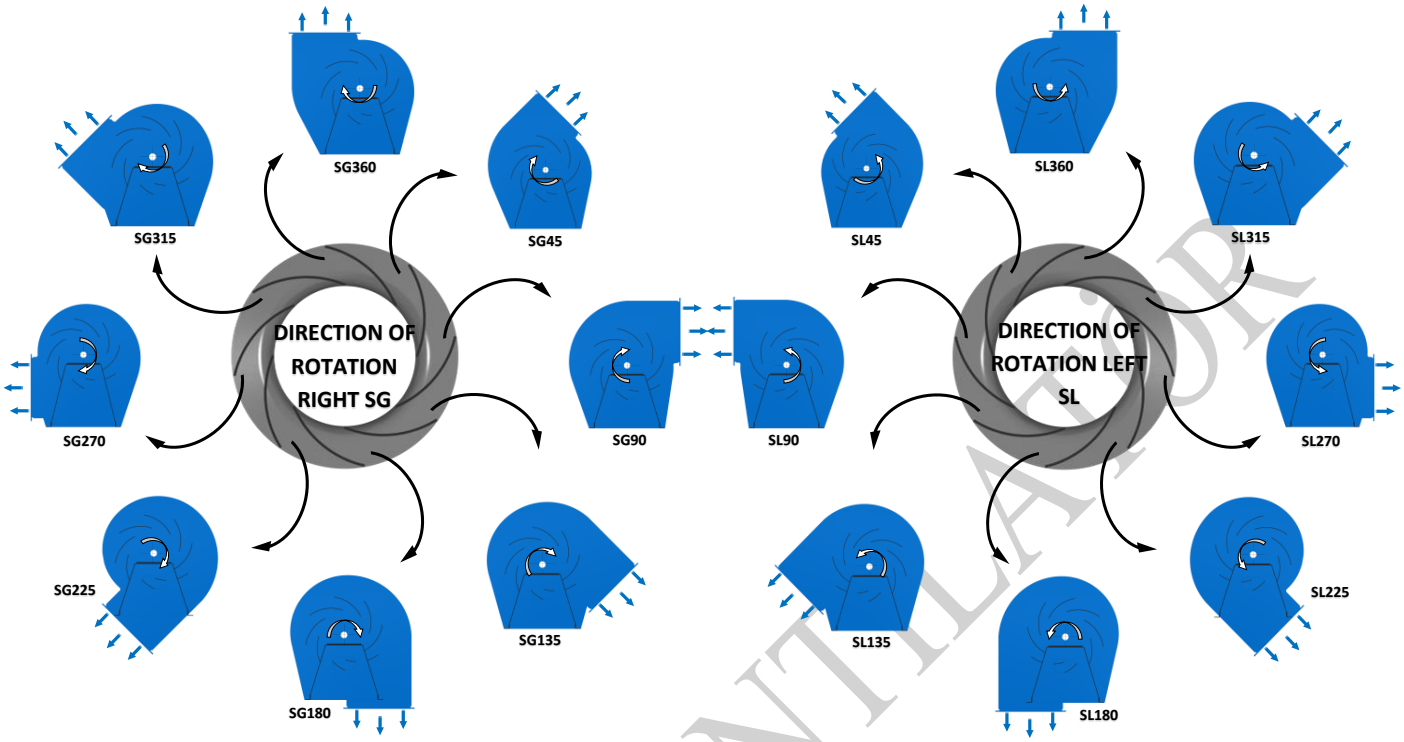
4.DESCRIPTION OF CENTRIFUGAL FAN and TERMS

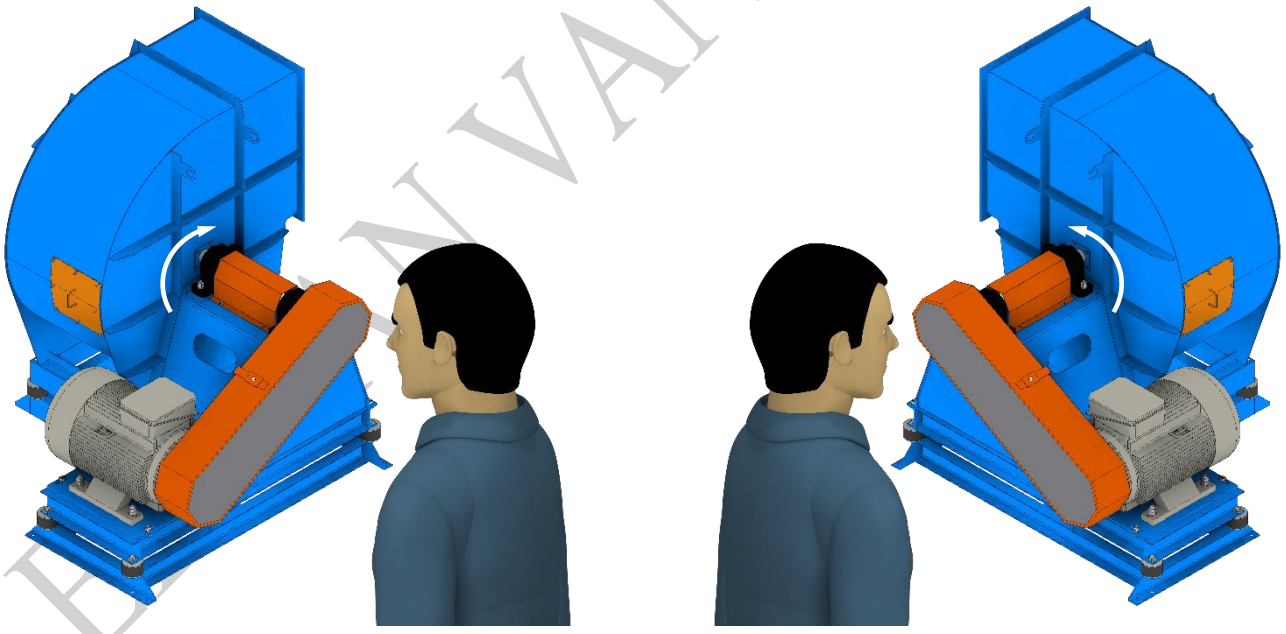
4.1. Product Description

Name of Customer			
Product Tracking Information		**Motor Specifications**	
Order Number		Voltage (V)	
Manufacturing Date		Current (A)	
Product Type		Frequency (Hz)	
Serial Number		Power (kW)	
Design Data		Motor Revolution (rev/min)	
Drive Mode		Motor Serial Number	
Operating temperature (^{0}C) (O.C.)		**Drive Details**	
Elevation (m) (O.C.)		Motor Pulley Dia (mm)	
Flux Density (kg /m^3) (O.C.)		Shaft Pulley Dia (mm)	
Flow Rate (m^3/h- N.C.)		Belt Dimensions (mm)	
Total Pressure (mmSS) (N.C.)		Number of Belts	
Total Pressure (mmSS) (O.C.)		Coupling Type	
Fan revolution (rev/min)		Bearing Type	
Fan Position		Bearing Carrier	
Net Weight (Kg)		Bearing Lubricant Type	
N.C. : Normal Conditions			
O.C. : Operating Conditions			
Prescribed operating conditions:			

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4.2. Fan Positions





Right Rotation **Left Rotation**

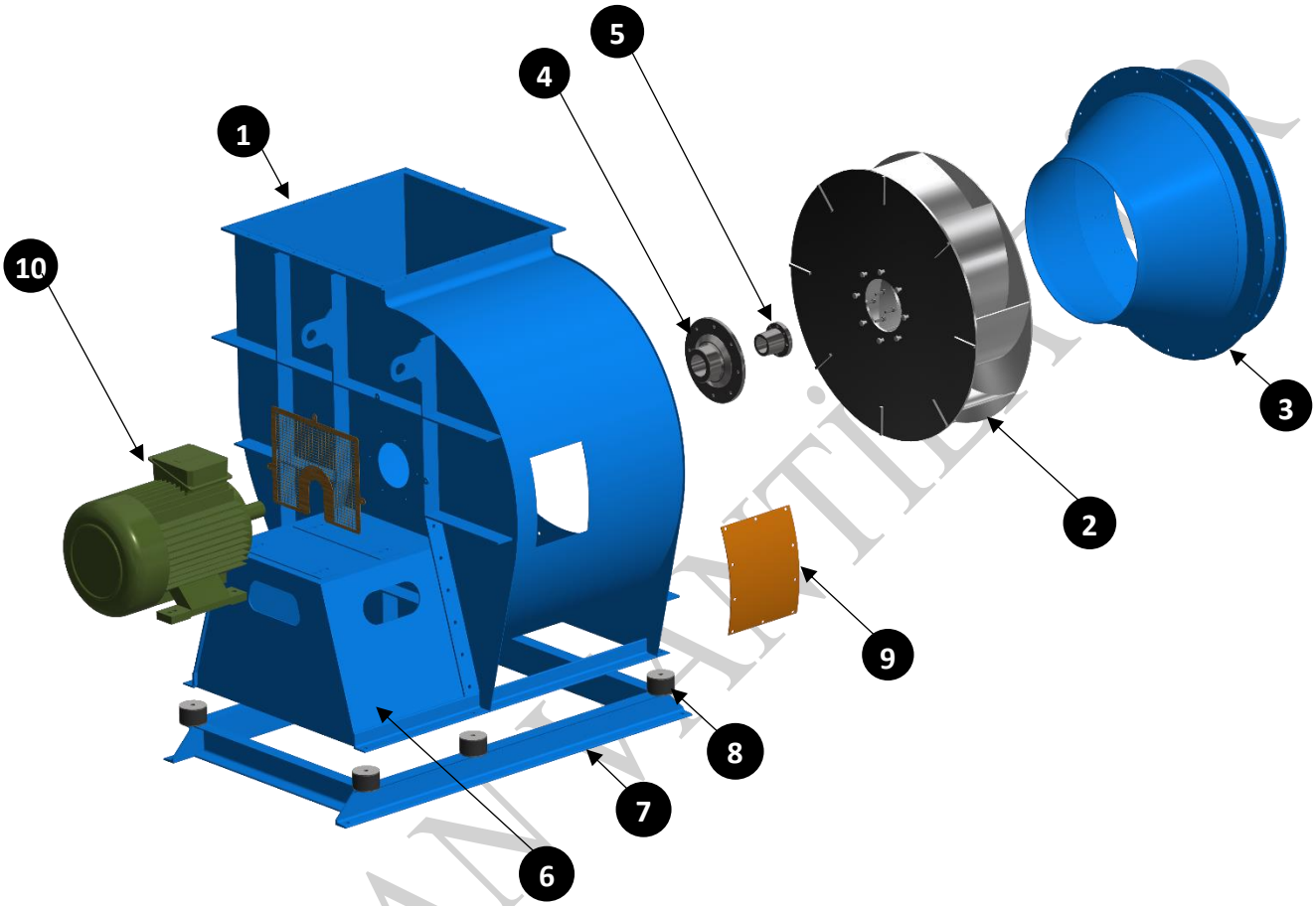
While selecting the fan position, it is designated by viewing from the motor side if it is Directly Coupled and from the pulley side if it is Belt Pulley.

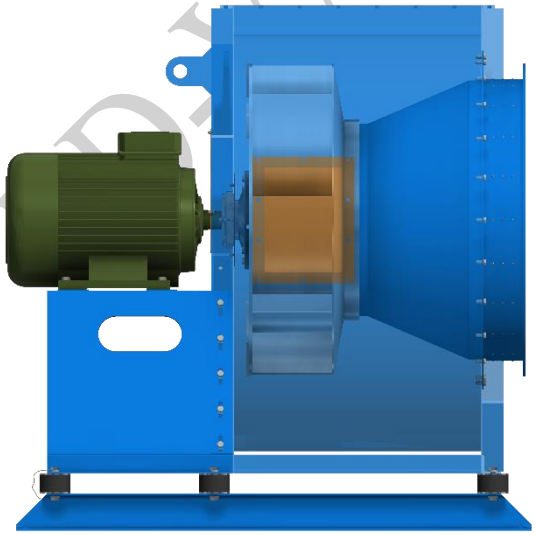
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5.PARTS AND ACCESSORIES OF CENTRIFUGAL FAN

5.1.Parts List

5.1.1.Assembling/Disassembling Parts List for a Directly Coupled Centrifugal Fan

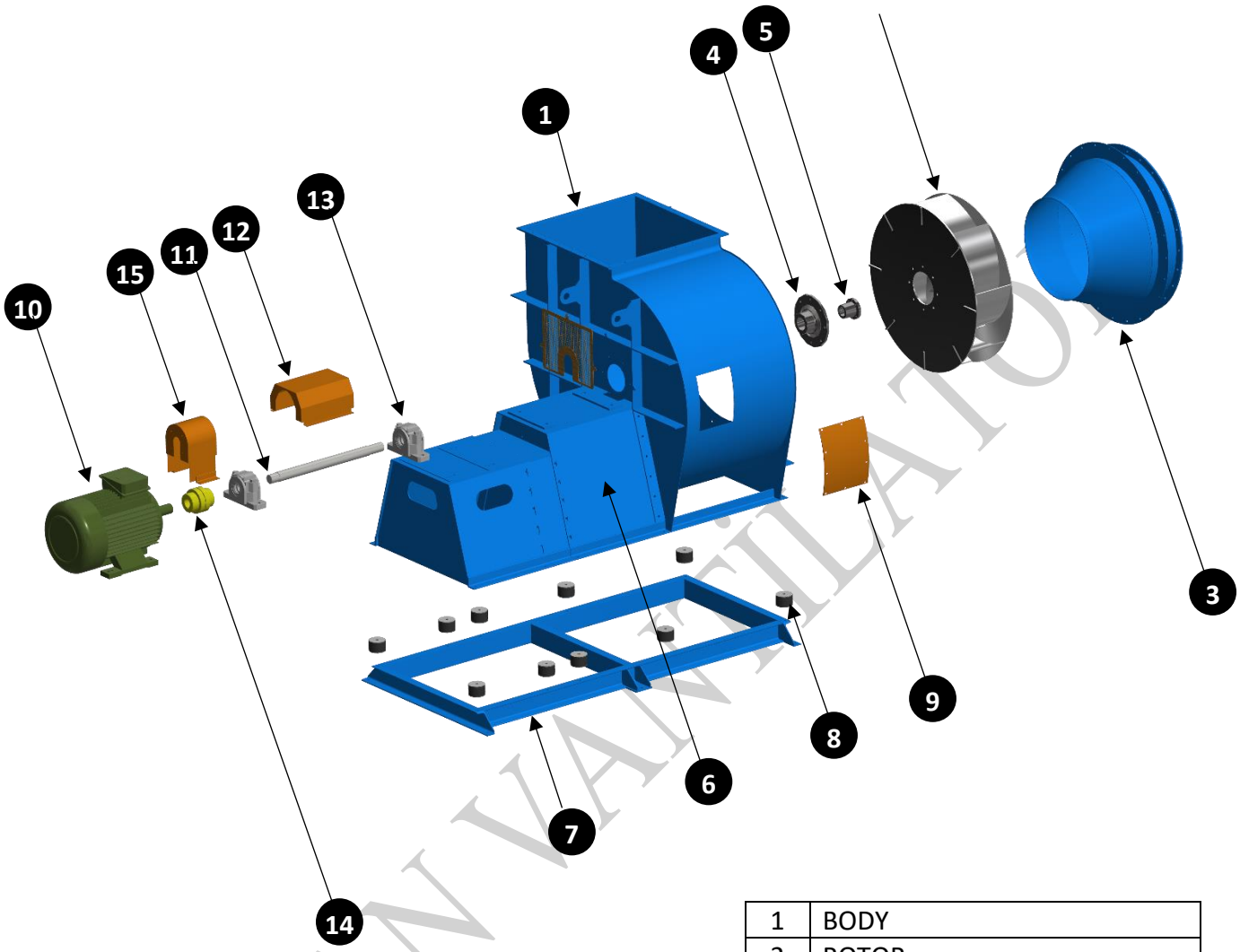


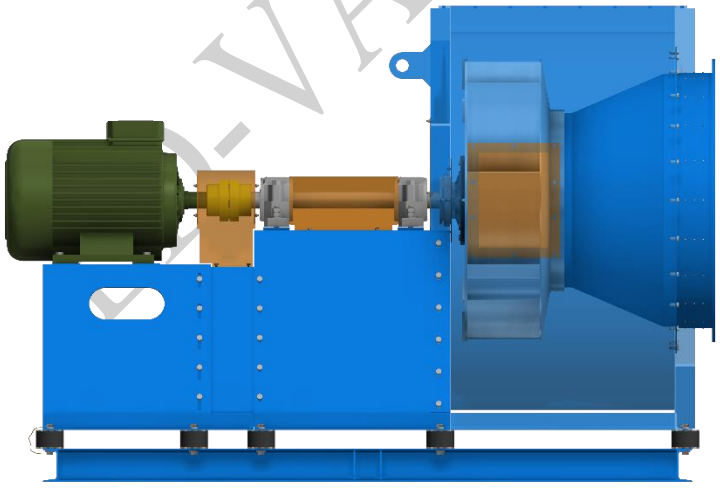


1	BODY
2	ROTOR
3	SUCTION
4	HUB
5	TAPER BUSH
6	FAN BASE
7	CHASSIS
8	RUBBER CUSHION
9	MAINTENANCE COVER
10	MOTOR

5.1.2. Assembling/Disassembling Parts List

for a Directly Coupled Centrifugal Fan with Coupling

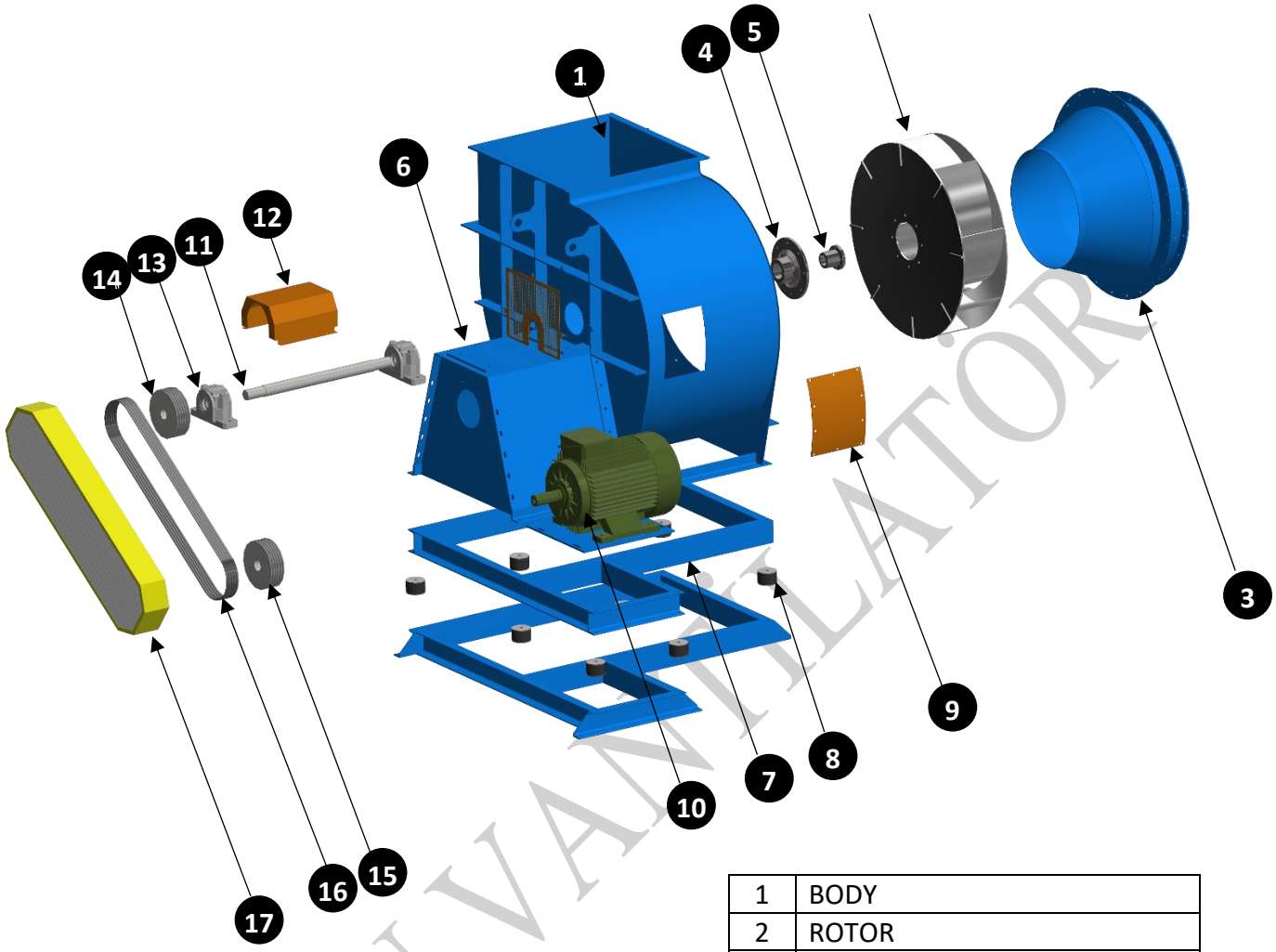




1	BODY
2	ROTOR
3	SUCTION
4	HUB
5	TAPER BUSH
6	FAN BASE
7	CHASSIS
8	RUBBER CUSHION
9	MAINTENANCE COVER
10	MOTOR
11	SHAFT
12	SHAFT GUARD
13	BEARING
14	COUPLING
15	COUPLING GUARD

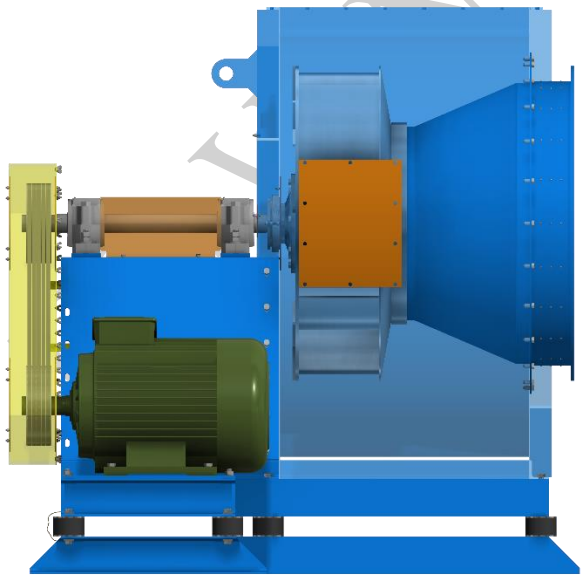
5.1.3. Assembling/Disassembling Parts List for a Belt Pulley Centrifugal Fan

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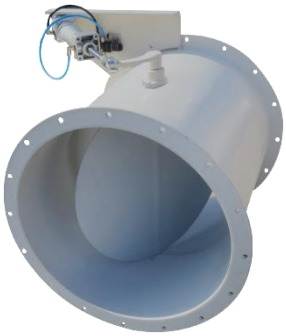
1	BODY
2	ROTOR
3	SUCTION
4	HUB
5	TAPER BUSH
6	FAN BASE
7	CHASSIS
8	RUBBER CUSHION
9	MAINTENANCE COVER
10	MOTOR
11	SHAFT
12	SHAFT GUARD
13	BEARING
14	SHAFT PULLEY
15	MOTOR PULLEY
16	BELT
17	BELT-PULLEY GUARD



5.2.Accessories

5.2.1.Valves

1. Butterfly Valve



2. Drallregler Valve



3.Volumetric Valve



4.Slide Valve



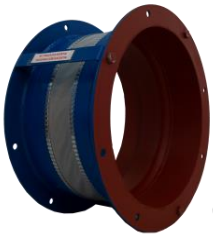
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NOTE: Drive modes may optionally be manual, pneumatic piston, proportional or on-off actuator.

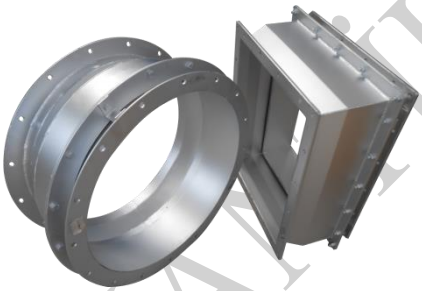
5.2.2.Compensators



Cloth Compensator



Cloth Compensator



Metal Compensator

5.2.3.Mufflers



High Pressure Resistant



Low Pressure Resistant

6.COMMISSIONING AND OPERATION

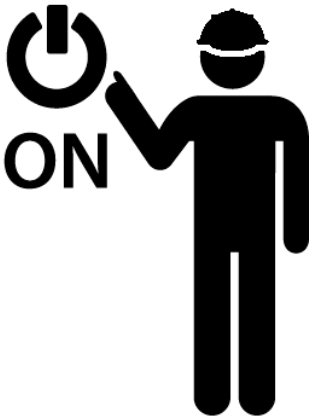


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6.1. What To Be Paid Attention Before Commissioning the Fans:

- Electric motor and electrical circuits must be definitely connected and operated by a licensed electrician.
- Electrical connections and switchboard must comply with EN 60204-1:1995 standard.
- Check that the operating voltage as indicated in the label on the motor is in compliance with the grid voltage. Motor must be protected by a thermal relay set to the motor amperage. Make sure that body grounding is be duly made.
- Before commissioning the fan, all safety precautions must be reviewed.
- Before the initial lift of the fan, check whether or not there are impurities in the channels and clean if necessary.
- When the fan is to start to operate, turn off one of the valves on the suction or exhaust port each time. By switching off and on the motor switch for a short time, check whether or not the fan rotates in the correct direction (direction of the arrow on the fan). If it does not rotate in the correct direction, then switch the pole connections of the motor.
- Once the fan motor has been started, check the motor current by an amperemeter.

WARNINGS:



- ***According to IEC Standards, it may be operated not more than two minutes at an amperage 1,5 times the motor's amperage tag. Set the motor relay to such amperage and time values. During operation, motor amperage is usually allowed to be up to 90% of the rated value.***
- ***After commissioning, belts will elongate over time. Fan belts should be checked for elongation at the expiry of 15 hours of operation. Afterwards, they should be checked on quarterly basis.***
- ***In consideration of the operating conditions, belts of the fan must be protected against dust, lubricants and chemicals.***
- ***Bearings must be checked for heat and sound at the initial hours of operation. In case bearings heat up in the beginning, stop the fan, cool down the bearings by air and re-start the motor. If the heating of the bearings cannot be overcome in this way, contact our company for remedy.***

6.2. Installations and Modifications Which May Be Done in the Entity

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Upon the commissioning of the fan, please follow the following sections for any maintenance and installations which may be carried out in the drive group by the entity.

6.2.1. Disassembling and Reassembling of the Pulley

All ED_VAN fan pulleys are equipped with tapered crimp taper bush. The taper bush makes it very easy to remove the pulley. In this system with tapered taper bush, rotating parts are fastened on the shaft by the contraction method. Hexagonal allen bolts are only used for assembling and disassembling.

On the chuck surface on the small dia side of the taper bush, there are holes threaded parallel with the axis. Some of them are tightening holes and some of them removing holes. When you place the taper bush in its slot in the pulley, those coinciding with the holes on the taper bush are used for tightening, and the other for removing. When the bolts are inserted in the tightening holes and then tightened, they pull the tapered taper bush into its place in the pulley and tighten the shaft with a great force. For removal, all bolts are removed and some are inserted into the assembling holes, it is easily removed from the shaft. Do not use pulling in this type of a pulley as it may damage the pulley.



6.2.2. Advantages of Tapered Crimp Taper Bush

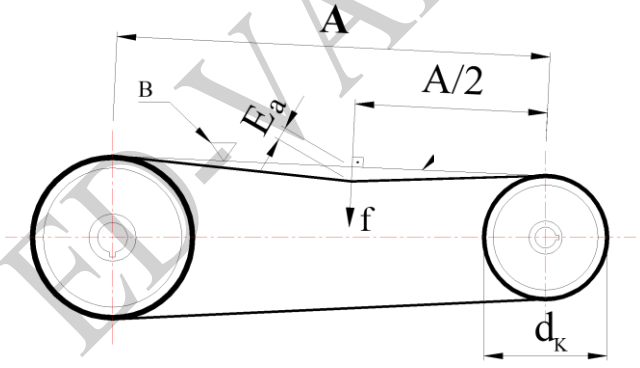
- It eliminates such additional operations as hole processing, key way drilling in the hub of the pulley.
- It does not require any shoulder for resting on the shaft. It is tightened in any position on the shaft.
- It does not require any qualified personnel as assembling is very easy with a tightening bush.
- Such parts as chuck thrust washer, spacer, bolt, etc. are not required in installation.
- Maintenance and parts replacement as well as simple removal during operation also provide convenience in disassembling. Further, as it does not require such additional tools as pullers, etc. and as there is no need for hammer impact, it eliminates all risks.

6.3. Tensioning of Belts

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Belts of the fan should be checked for the amount of elongation at the expiry of 15 hours of operation. Afterwards, it should be repeated on quarterly basis. Make the belt adjustments in the following manner when the belts are replaced for this reason or for any other reasons.

Belt Profile	Pulley Dia dk (mm)	Bending of belts Ea (mm)								
		Axis distance of belts A (mm)								
		500	630	800	1000	1250	1600	2000	2500	3150
SPZ (10)	>100 ≤ 125	14	17	22	28	34	44	55	-	-
	>140 ≤ 160	13	16	20	25	31	40	50	63	-
	>180 ≤ 200	11	14	18	22	28	36	45	56	71
SPA (13)	>180 ≤ 200	15	19	24	30	38	48	60	75	95
	>224 ≤ 250	13	16	20	25	31	40	50	63	79
SPB (17)	>224 ≤ 250	15	19	24	30	38	48	60	75	95
	>280 ≤ 355	15	19	24	30	38	48	60	75	95
SPC (22)	>315 ≤ 355	15	19	24	30	38	48	60	75	95
	400	14	17	22	28	34	44	55	69	87
	450	13	16	20	25	31	40	50	63	79
	500	11	14	18	22	28	36	45	56	71



A = Distance between pulley hubs (mm)

f = Compressive force

E_a = Belt drift

Required E_a belt bending amount is measured by a compass by placing a steel ruler on the B surface.

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7.MAINTENANCE AND LUBRICATION

7.1. Maintenance (Periodical Maintenance)

7.1.1 General Maintenance

The most expensive maintenance is cheaper than the cheapest repair. The better the fan is maintained, the healthier and more trouble-free it runs. Those in charge of the operation and maintenance of the fan must comply with the rules as given in these instructions and carry out the Daily, Weekly, Monthly, Quarterly and Annual maintenance operations as listed below.

Daily Maintenance

- If the bearings are lubricated with oil, check the oil level. If the regular oil level has dropped, refill with oil.
- Check whether or not there is any vibration and shaking.
- Make sure that the baring re protected against wetness.
- Check the motor temperature. (In practice, temperature should be as high as your hand will withstand when you touch with your palm.)

7.1.2. Weekly Maintenance

- Check that all connecting bolts (for instance, chassis, bearing and motor fastening bolts) are tight.
- Check the tension of the belts.
- Open the maintenance cover on the motor body and clean any impurities and dust particles accumulated on the fan blades. In the meantime, ensure the replacement of the rotor if any damage or wear has occurred on the rotor.

7.1.3. Monthly Maintenance

- If any wear is observed on the belts, replace them with new ones. If such wears occur within short periods of time, check that the pulleys are well aligned.
- Open the fan's maintenance cover and check that the fan hub is tight. Afterwards, clean if any corrosion has occurred on the motor shaft.
- If any repair or modification is made on the fan for any reason whatsoever, make sure that the dynamic balancing of the fan must have been made before it is installed on the fan.

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7.1.4. Quarterly Maintenance

- Grease lubrication shall be carried out in compliance with the **Grease lubrication** instructions as given in paragraph **8.2** hereof. If there is any loss of grease in the bearing, add grease of the same brand and type.
- In bearings operated by oil, if the bearing temperature does not exceed 50°C and if the contamination risk is lower, it may be sufficient to change the oil once a year. However, oil may have to be changed on quarterly basis at high temperature and heavy operating conditions (for instance, at operating temperatures of 100°C).
- Check whether or not there is any wear on the rotor.

7.1.5. Annual Maintenance

- In case of deterioration of the fan paint, re-paint it. In extraordinary cases, this period may be shortened.
- Greases applied into the bearings may only protect the bearing for a certain priod of time. Afterwards, they lose their lubricating properties. Greases should be changed once a year.
- Check the rotor blades, pulleys or couplings for robustness.

7.2. Lubrication and Lubrication Periods

7.2.1. Grease Lubrication

- In case of losses of lubricant, turn on the bolt of the greaser on the upper part of the bearing. Grease is conveyed in from the hole of the greaser.

WARNINGS:

- If any heating occurs in the bearings after the addition of grease, it means that there is too much grease. Discharge some grease.
- In compensating loss of grease, grease of the same brand and type must be used.

In changing grease, discharge all of the grease in the bearings. Then wash them with pure gasoline or benzole. Do not ever use diesel oil or kerosene. Do not dry using oakum and similar fibrous or linty materials. Always use clean and lint-free cloths. Press grease into the ball section of the bearings. In the meantime, fill one third of the bearing carrier with grease. See the **Lubrication Diagram** given in subparagraph **7.2.3** for lubrication periods.



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Opening the Greaser and Bearing for Cleaning

Use of

- **UNDER NORMAL CONDITIONS**

✓ SHELL – GADUS S2 V100C 3 (ALVALINA RT 3)

- **IN WORKS IN HOT ENVIRONMENT**

✓ SKF LGHP2/150°

or equivalents thereof is recommended.

Lubricant originally filled in the bearings by ED_VAN

Chemical composition: Lubricating grease containing highly refined mineral oil and additives. Highly refined mineral oil contains DMSO extract at <3% (by weight) as per IP346.

Harmful ingredients

Chemical name	CAS-No. EC-No. *Registration number*	T.R. SEA No 28848	Concentration (%)
Zinc Naphthenate	12001-85-3 ***234-409-2***	Skin Irritation 2; H315 Aquatic Acute 1; H400 ***Aquatic Chronic 1; H410***	0,25 - 2,4
Triazole derivative	91273-04-0 ***401-280-0***	Skin Abrasion 1B; H314 Skin Sensitivity 1A; H317 ***Aquatic Chronic 1; H410***	0,01 - 0,09

Please contact the company for details about the safety precautions.

7.2.2. Oil Lubrication

Oil lubricant is used in cases of high rotation speed or in hot operation regime or in cases where one wants to remove the heat occurring externally out of the bearing.

RECOMMENDED OIL: SHELL - Super Plus 20W/50

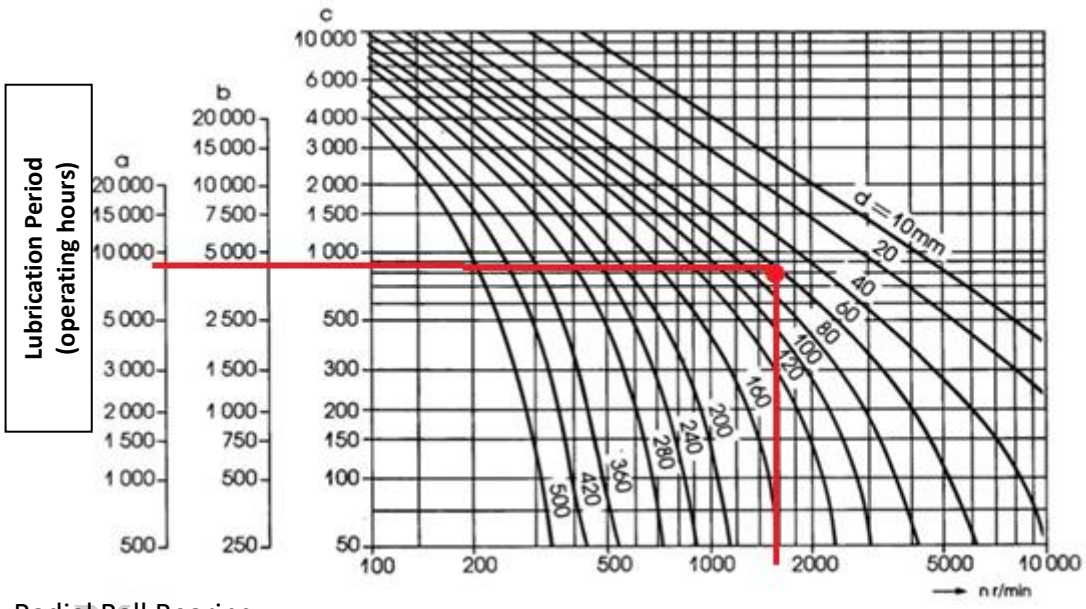
In special fans operated at gas temperatures above 400°C, bearings manufactured with water-cooled casings are used. Collared water connections should be made at the water inlets and outlets with necessary pipe diameters of which systems are located on the bearings. Temperature should be controlled by connecting thermometers at the inlets and outlets of the system if necessary. At gas temperatures above 800°C, the fan is of completely special design and the shaft and bearings must be water-cooled.

WARNING:

In compensating for any loss of oil, make sure to add oil of the same brand and type.

7.2.3. Lubrication Period

You may find lubrication period in the lubrication diagram in the following page.



a: Radial Ball Bearing

b: Cylindrical Roller Bearing, Needle Roller Bearing (Needle)

c: Spherical Roller Bearing, Tapered Roller Bearing, Axial Ball Bearing

d: Bearing Inner Diameter

Example:

A fixed-ball bearing with hole diameter of (d) 60 mm rotates at a speed of 1500 rev/min. Operating temperature varies between 60°C and 70°C (140-160°F). What is the required lubrication period?
Draw a line upwards from the point showing 1500 rev/min on the axis x in the diagram and have it intersect the d=60 mm curve. Draw a line parallel to the axis x from the point so found and read the approximate value of 10.000 on the scale a (radial-ball). Thus, re-lubrication period is found to be 10.000 operating hours.

8. TROUBLESHOOTING IN THE ENTITY, CAUSES AND REMEDIES

8.1. Troubleshooting in the Entity

While carrying out troubleshooting in the entity, carefully monitor the following issues:

- Instability of the fan
- Heating of the bearings
- Incorrect installation of the bearings
- Elongation and breakage of the belts
- Loosening of the chassis, motor or bearing bolts
- Breakdown of the coupling setting

Make sure to consult ED_VAN for any failures marked with!

FAILURE: 1

VIBRATION IN THE FAN.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Base has been incorrectly installed.	Check and level the base and the chassis connections.
There are impurities in the bearings.	Check them and remove impurities. Replace the bearing if necessary.
Bearing tensioning sleeve is distorted.	Check the installation and replace the sleeve if necessary.
Breakdown of the rotor, motor or pulley balance.	Check the balance and carry out re-balancing.
Eccentric shaft, imbalance in the fan, fan's friction on the body.	Shaft and the fan, position them correctly.

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Coupling pulley or fan is mounted on the shaft with too much clearance.	Check the mounting.
Outer ring of the bearing moves in the housings or bearing moves on the shaft.	Check the bearings, repair them and replace shaft or bearings if necessary.
Dust or impurities stick to the fan.	Replace with a proper fan or clean the fan at short intervals.
Fans have been connected to channels without elastic seals or channels rigidly connected to the fan have caused the body to get distorted.	Stop the operation. Remove the rigid ducts. Start the motor and check the vibration in the duct connections.

FAILURE: 2

ABNORMAL NOISE IN THE FAN.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Imbalance in the fan.	Adjust the balance in accordance with permanent imbalance.
Deflection in the fan shaft.	Check the deflection of shaft. Replace with a new shaft if necessary.
Friction between the moving parts of the fan or in the motor.	Stop the fan; check and prevent friction.
Outer casing of the bearing moves in the carrier or bearing moves on the shaft.	Check the carriers; replace the shaft or bearings if necessary.
Fan rubs against the body or suction funnel.	Stop the fan; check the installation and adjust it.
Dust or impurities stick to the fan.	Replace it with a proper fan or clean the fan at short intervals.

FAILURE: 3

ED-VAN VANTİLATÖR

ROTOR WEARS OUT FAST.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Operating temperature of the fan rises.	Replace with a fan with proper material quality.
There are corrosive gases not specified in the purchase order.	Replace with a fan with proper material quality.
Dust filter is clogged. (If there is a filter on the suction end.)	Clean the filter; replace it if necessary.
Fan blades wear as there is a leak in the dust filter.	Carry out the periodical maintenance of the dust filter.

FAILURE: 4

FAN FAILS TO REACH ITS DESIGN VALUES.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Gas or air flow rate is not set (valve setting), thus flow rate is too high; motor consumes too much power.	Adjust the valves; check the consumed power.
Channels of filters are not sealed.	Check the channels and seals.
Problem in the channels. (Broken, cracked channels or turned-on valve)	Checks the channels and valves.
Dust filter is clogged. (If there is a filter on the suction end.)	Clean the filter; replace it if necessary.
Fan rotates in the direction opposite to the arrow on the fan.	Check and reverse the direction of rotation of the motor.
Loss of pressure or incorrectly determined flow rate.	Check; replace the fan.

FAILURE: 5

ED-VAN VENTİLATÖR

ELECTRIC MOTOR FAILS TO START UNDER LOAD.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Poles and switch are incorrectly connected.	Check and correct.
Switch is not correctly turned or connection breaks off.	Correct the connections; check the switch. Repair or replace it.
Grid voltage is low or one of the phases is missing.	Check the grid voltage or the phases.
Moving parts of the fan are mechanically locked.	Uncouple the motor; check the coupling or belt-pulleys
Motor power is low. (Fan needs higher power.)	Check the operating curve of the fan and replace it with a correct motor.
Fan runs with hot air and starts cold.	Check the power of the fan on the operating curve. Turn off the valve.
Air flow rate of the valve is not well set, thus its flow rate is high. Therefore, it consumes much power.	Set the valve to its design value.

FAILURE: 6

ELECTRIC MOTOR STARTS HARD.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Motor power is low. (Fan needs higher power.)	Check the operating curve of the fan and replace it with a correct motor.
Fan runs with hot air and starts cold.	Check the power of the fan on the operating curve. Turn off the valve.
Air flow rate of the valve is not well set, thus its flow rate is high. Therefore, it consumes much power.	Set the valve to its design value.
Thermal switch is incorrectly set.	Reset it.
Load increases if there is any failure (breakage, crack, etc.) in the channel installation.	Check the channel installation.

FAILURE: 7

EDVAN VANTILATÖR

OVERHEATING IN THE ELECTRIC MOTOR DURING OPERATION.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Poles and switch are incorrectly connected.	Check and correct.
Switch is not correctly turned or connection breaks off.	Correct the connections; check the switch. Repair or replace it.
Grid or motor phase is cut off.	Check the continuity of the phase.
Fan runs with hot air and starts cold.	Check the power of the fan on the operating curve. Turn off the valve.
Air flow rate of the valve is not well set, thus its flow rate is high. Therefore, it consumes much power.	Set the valve to its design value.
Friction between the moving parts of the fan or in the motor.	Stop the fan. Check the condition and prevent friction.
Motor fails to cool down or cooling fan is damaged.	Clean the motor and fan. Replace the motor if necessary.
Motor starts with too high amperage.	Review the operating instructions of the motor.

FAILURE: 8

REVOLUTION REDUCES WHEN LOAD INCREASES.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Poles and switch are incorrectly connected.	Check and correct.
Switch is not correctly turned or connection breaks off.	Correct the connections; check the switch. Repair or replace it.
Grid voltage is low.	Check the grid voltage.
Cracks or breaks in the channels. Valve opens suddenly.	Check the channels and valve.

FAILURE: 9

ED-VAN VANTİLATÖR

WHIRRING OR ABNORMAL SOUNDS IN THE ELECTRIC MOTOR.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Switch of the electric motor is not correctly turned or connections break off.	Check the connections. Repair or replace the connections.
Grid or motor phase is cut off.	Check the continuity of the phases.
Friction between the moving parts of the fan or in the motor.	Stop the fan. Check the condition and prevent friction.

FAILURE: 10

ELECTRIC MOTOR STARTS HARD.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Poles and switch are incorrectly connected.	Check and correct.
Motor power is low. (Fan needs higher power.)	Check the operating curve of the fan and replace it with a correct motor.
Valve is not set well.	Adjust the valve setting according to the design.
It consumes too much amperage at the start.	Check the motor label. Replace the motor if necessary.
Motor base is incorrectly installed.	Re-adjust the base.
Motor bearings are over-lubricated.	Discharge the excess lubricant.
Impurities in motor bearings.	Check the bearings; clean them and replace them if necessary.
Bearing not in compliance with the rated values is installed.	Replace with a proper bearing.
Lack of lubricant in the bearings.	Lubricate the bearings and replace them if necessary.
Excessive axial forces on the bearings.	Align the bearings and shaft to the axis.
Belts are tensioned too much.	Check the tension.

FAILURE: 11

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ABNORMAL HEATING IN FAN BEARINGS.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Bearings are incorrectly installed on the base.	Check the condition of the bearings and level them.
Bearings are lubricated too much.	Discharge excess lubricant.
Impurities in motor bearings.	Clean the bearings and replace them if necessary.
Bearing not in compliance with the rated values is installed.	Replace with a proper bearing.
Bearing tensioning sleeves are distorted.	Check the installation; replace the sleeve if necessary.
Excessive axial forces on the bearings.	Align the bearings and shaft to the axis.
Too much tension on the belts.	Check and correct the tension.
Bearing tensioning sleeve is tightened too much	Tighten it to the value in the bearing catalogue.
Outer casing of the bearing moves in the carrier or bearing moves on the shaft.	Check and repair the carriers; replace the shaft or bearings if necessary.

FAILURE: 12

SOUND COMES FROM THE FAN BEARINGS.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Bearing not in compliance with the rated values is installed.	Replace with a proper bearing.
Bearing tensioning sleeves are distorted.	Check and replace them if necessary.

FAILURE: 13

ABNORMAL HEATING IN THE PULLEYS.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Gage setting of the belts is poor.	Check. Carry out gage adjustment.
Belts rest on the inner side of the pulley channel.	Replace the pulleys or belts.
Pulley of nonconforming diameter is installed.	Check. Replace the pulleys.
Pulleys not complying with the pulley profile in the tag are installed.	Replace the pulleys.

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Belts are not sufficiently tensioned.	Tension the belts.
Missing belts.	Install belts at correct number and chose proper sizes.
Slippery belts contaminated by lubricants.	Rub the lubricant clean and prevent the belts from being lubricated.

FAILURE: 14

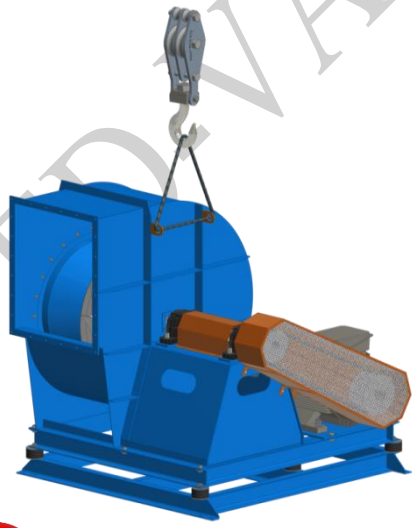
BELTS WEAR OUT FAST.

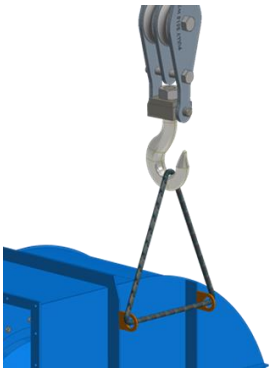
CAUSES OF FAILURE:	**REMEDIES OF FAILURE:**
Too much tension on the belts.	Check and correct the tension.
Gage setting of the belts is poor.	Check. Carry out gage adjustment.
Pulleys not complying with the pulley profile in the tag are installed.	Check and replace the pulleys.
Pulley of nonconforming diameter is installed.	Check. Replace the pulley.
Insufficient number of belts and too long belts.	Correct the number of belts and select belts of proper length.

9.TRANSPORT AND STORAGE

9.1.Transport

In order to transport the fan from one place to another, use the handling hoops on the fan or attach handling hooks in the holes on the fish plates available on the body.





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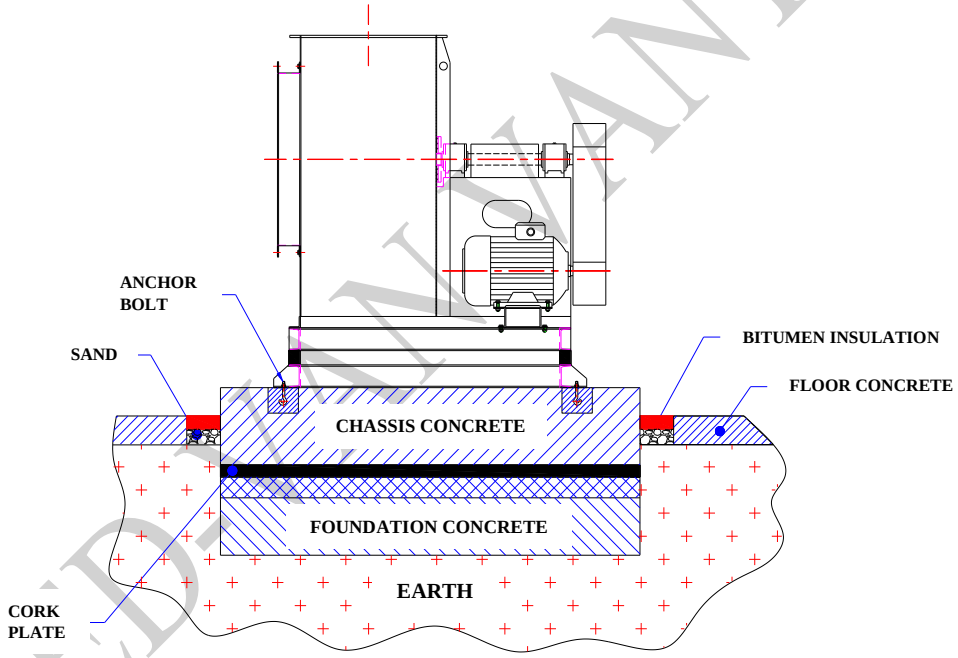
WARNING:

In case of relocation, do not ever handle the fan by its sensitive parts (shaft, rotor inlet, suction and exhaust end flanges, drive motor, etc.).

9.2.Storage

- Fans must be kept in enclosed spaces and protected against moisture, chemical reactions and rain.
- Shafts must be kept away from moisture and extremely high temperatures so that they will not be corroded.
- If the fan will not be operated for prolonged period of time, such parts as the shaft, bearings, etc. must be lubricated.
- Our company may not be held responsible for any damages which will occur upon the entry of the means of transport in the customer's premises and which will arise from storage.

9.3.Installation of the Fans



Installation of the Fans on the Floor

CAUTION: *While placing the chassis of the fans on the concrete floor, it should be detached from the concrete floor.*

- In compliance with the construction technique should be 5 cm to 10 cm in thickness.
- A cork layer 3cm – 5cm thick should be laid over the foundation concrete.

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- Chassis concrete should be cast over the cork layer to be 2 to 4 times the weight of the fan, depending on the size of the fan.
- Chassis concrete on which the fan will rest should be 10 cm to 20 cm above the floor concrete. Insert wooden wedges into the places of connection so that such places will remain holes. Foundation should have well dried and set before the installation of the fan.
- Once the fan has been placed on the foundation, it should be precisely installed by means of a water level in accordance with the axis direction of the shaft. Once the fan has been correctly installed, tighten the foundation anchor bolts and check with a water level again.

Note: In cases where the foregoing foundation system could not be properly prepared, the fan is precisely placed on the flat floor precast or planned to cast by means of a water level in accordance with the shaft axis direction and then fixed with extruded steel dowels.

WARNINGS:

In locations where foundation and chassis concrete is not applied, a common base with rubber wedges should be definitely applied.

When it is unfavourable to convey the vibrations to the suction and exhaust channels, flexible canvas rubber or flexible compensators may be affixed to the suction and exhaust channels.

Do not strike such rotating parts as the fan, shaft, bearings, motor, etc. with a hammer or other similar hard tools during installation.

If the fan is to be installed outdoors, it must be protected against rain and external factors.

If it is probable that water will concentrate in the fan, drill a draining hole at the bottom and ensure the water to be discharged by means of a hose to be connected to such hole.

In dual-suction and free single-suction fans, the fan must be installed to allow a clearance of half of the suction radius of the fan from walls or any other obstacles which will prevent the fan from suctioning in consideration of maintenance and disassembling.

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