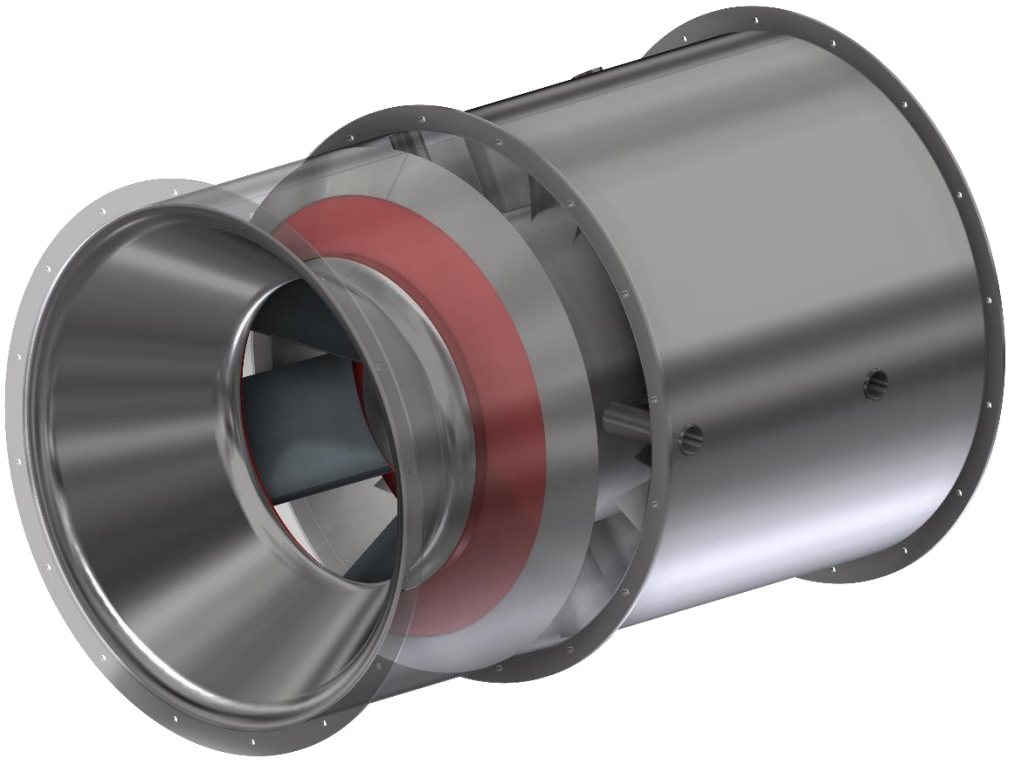
MIXED FLOW FAN OPERATING AND MAINTENANCE INSTRUCTIONS



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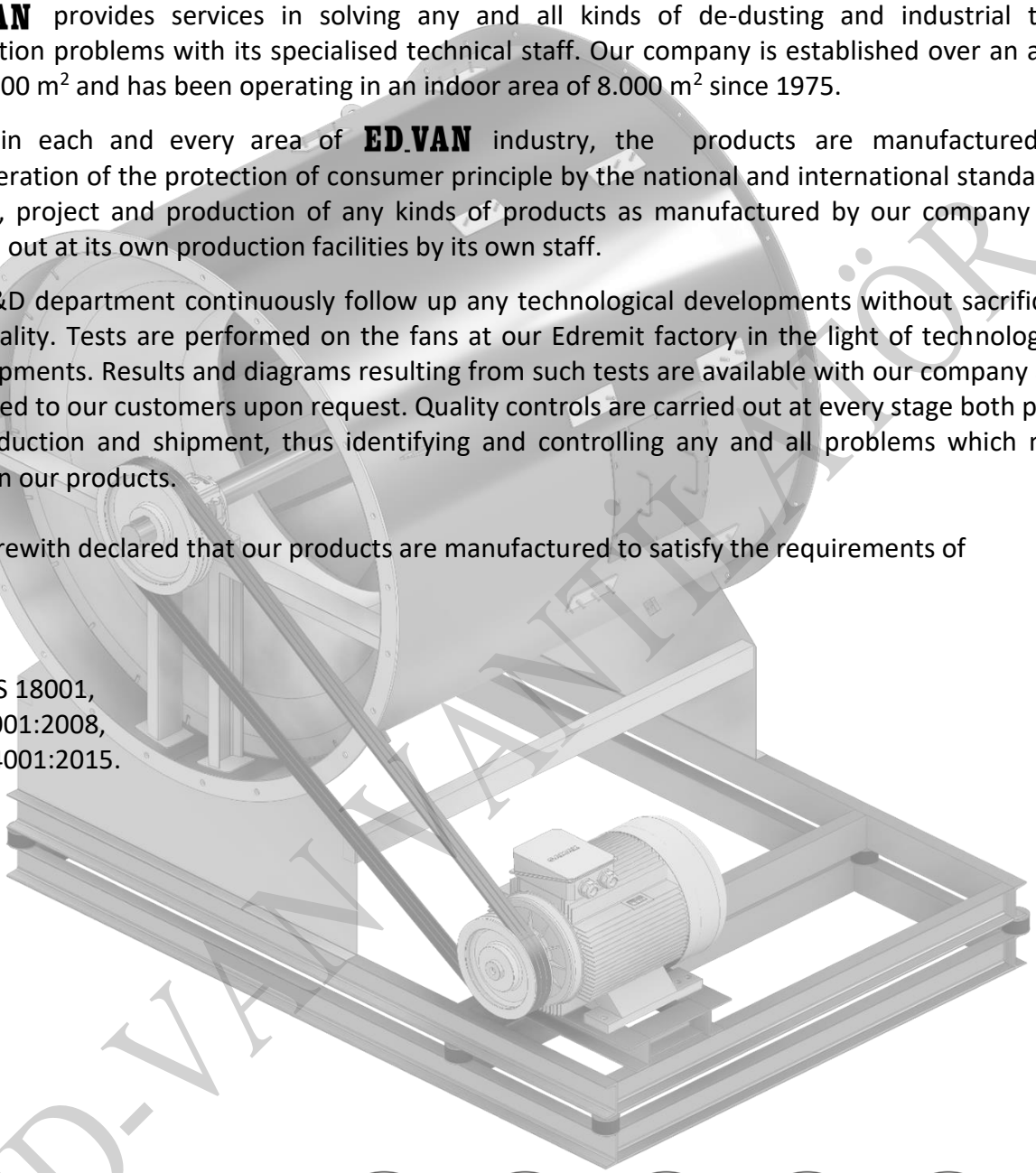
1.INTRODUCTION

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 **ED_VAN** industry, the 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.



ED-VAN EDREMİT/İZMİR

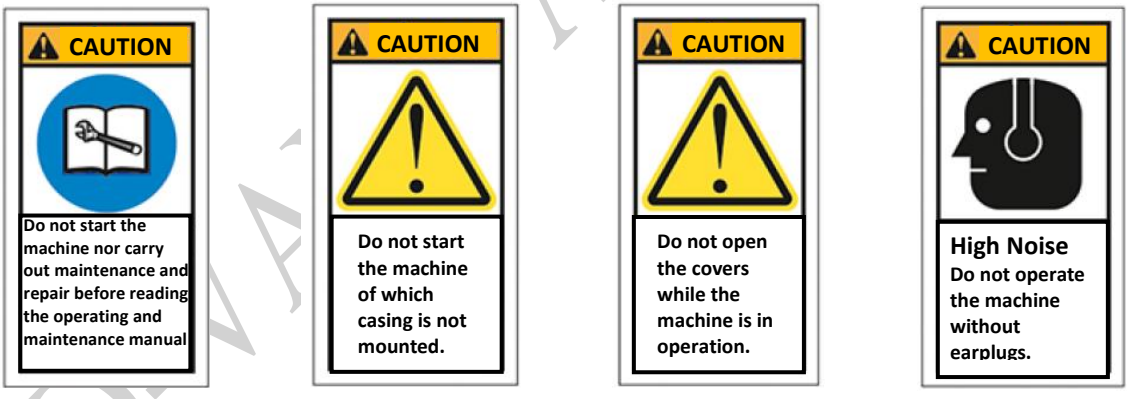
WARNINGS:

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 HAVALANDIRMA

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 lightning;

(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 MIXED FLOW FAN and TERMS

4.1. Product Description

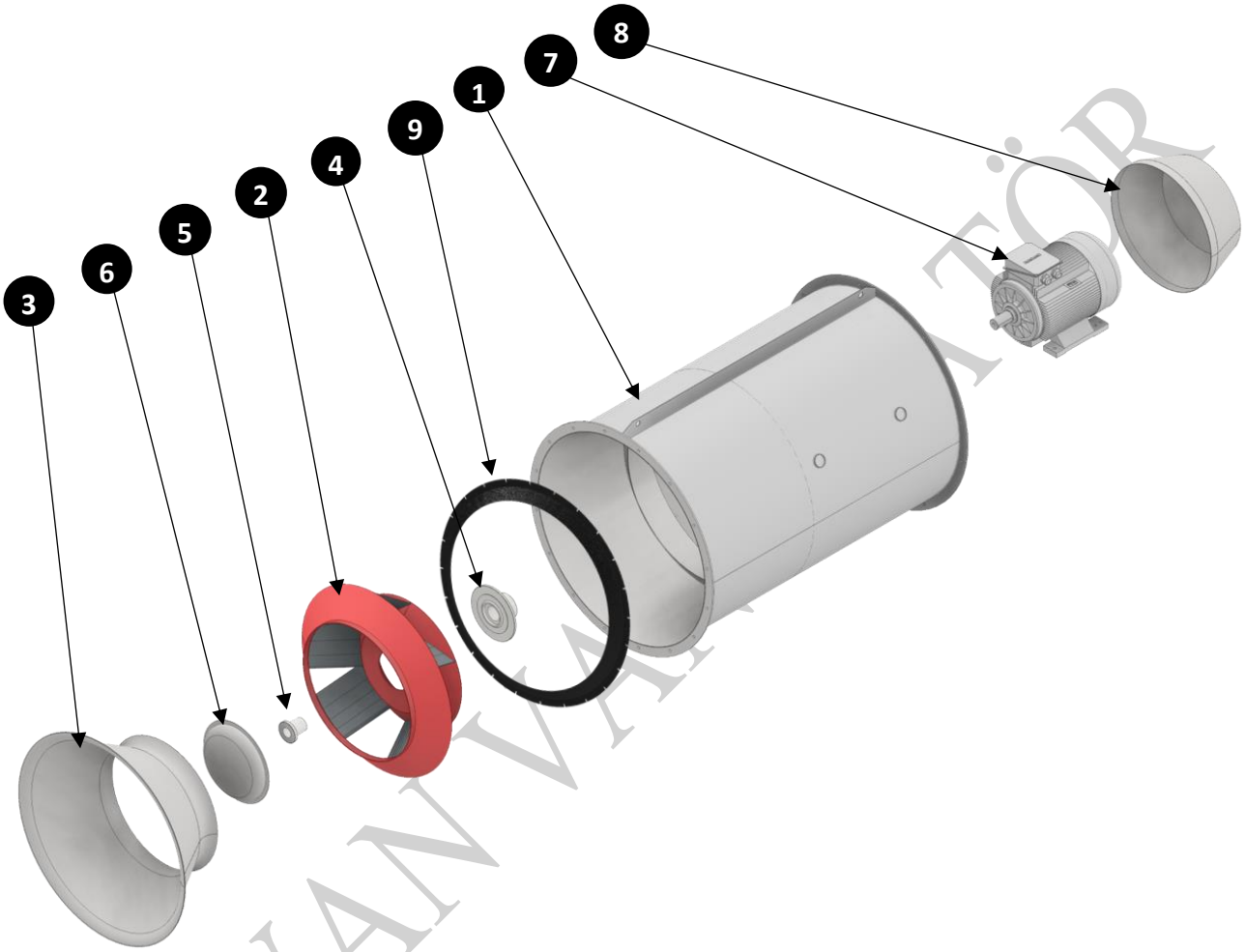
Name of Customer			
Product Tracking Information		**Motor Specifications**	
Order Number		Voltage (V)	
Manufacturing Date		Current (A)	
Product Type		Frequency (Hz)	
Serial Number		Power (kW)	
Design Data		Motor Revolution (rev/min)	
Drive Mode		Motor Serial Number	
Operating temperature (^{0}C) (O.C.)		**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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5.PARTS AND ACCESSORIES OF MIXED FLOW FAN

5.1.Parts List

5.1.1.Direct-Drive Mixed Flow Fan

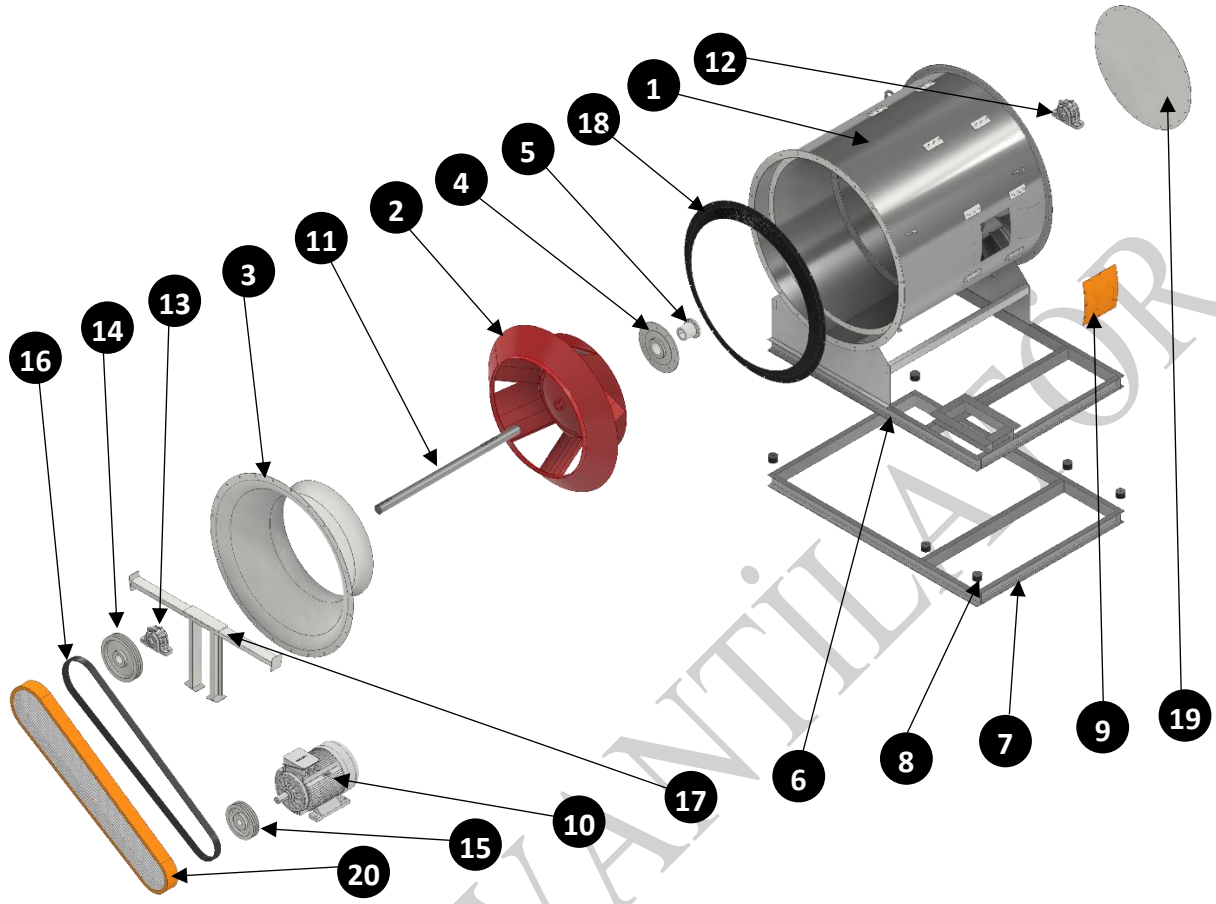




1	BODY
2	ROTOR
3	INLET CONE
4	HUB
5	TAPER BUSH
6	FRONT COVER
7	MOTOR
8	BACK COVER
9	STATIONARY STREAMLINER

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5.1.2. Belt-Drive Mixed Flow Fan



1	BODY
2	ROTOR
3	INLET CONE
4	HUB
5	TAPER BUSH
6	FAN BASE
7	CHASSIS
8	RUBBER CUSHION
9	MAINTENANCE COVER
10	MOTOR
11	SHAFT
12	BEARING (Rotor Side)
13	BEARING (Motor Side)
14	SHAFT PULLEY
15	MOTOR PULLEY
16	BELT
17	MOTOR BEARING BASE
18	STATIONARY STREAMLINER
19	BACK COVER
20	BELT-PULLEY GUARD



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5.2. Accessories

5.2.1.Valves

1. Butterfly Valve



2. Drallregler Valve



3.Volumetric Valve



4.Slide Valve



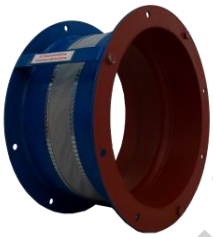
NOTE: Drive modes may optionally be manual, pneumatic piston, proportional or on-off actuator.

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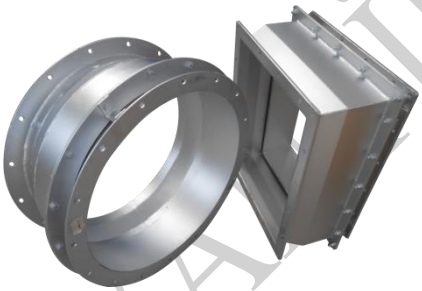
5.2.2.Compensators



Cloth Compensator



Cloth Compensator



Metal Compensator

5.2.3.Mufflers



High Pressure Resistant



Low Pressure Resistant

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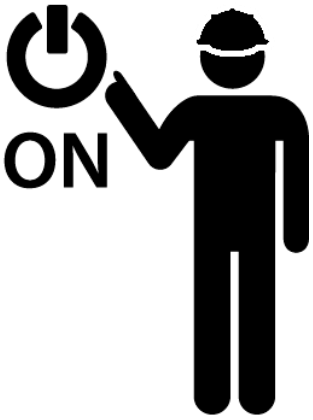
6.COMMISSIONING AND OPERATION



6.1. Things to consider 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 60204-1:2018 standard.
- Check that the operating voltage as indicated in the label on the motor is in compliance with the grid voltage.
- The motor must be protected with a thermal role adjusted according to the motor amperage. Body earthing must be done in accordance with the procedure.
- Check all safety precautions before operating the fan.
- Before the first start-up of the fan, check the ducts for foreign matter and clean them if necessary.
- Each time the fan starts, close one of the valves on the inlet and outlet nozzles. Check that the rotor rotates in the correct direction (as indicated by the arrow on the fan) by briefly switching the motor switch on and off; if it does not rotate in the correct direction, change the pole connections of the motor.
- After starting the fan motor, check the motor current with an ammeter.

WARNINGS :



- ***According to IEC standards, fan can be operated for a maximum of two minutes at 1.5 times the amperage of the corresponding motor. Set the motor relay according to this amperage and time value. In general, the motor current can be up to 90% of the labelled value during operation.***
- ***After commissioning, belts will elongate over time. Fan belts should be checked for elongation after 15 hours of operation. They should then be checked quarterly.***
- ***The fan belts must be protected from dust, oil and chemicals, taking into account the operating conditions.***
- ***During the first hours of operation the bearings should be checked for heat and noise. If the bearings become hot, stop the fan, cool the bearings with air and restart the engine. If heating of the bearings cannot be prevented in this way, our company should be contacted for a solution.***

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6.2. Installations And Modifications Which May Be Done During Usage

When the fan is commissioned, the following sections should be followed for any maintenance and installations that may be carried out on the drive group.

WARNING: Ensure that the machine is switched off and disconnected from the mains supply before carrying out any work on the fan.

6.2.1. Removing And Installing the Pulley

All ED_VAN fan pulleys are equipped with tapered clamping element (Taper Bush). The taper bush makes it very easy to remove the pulley. In this tapered taper bush, rotating parts are secured to the shaft by the contraction method. Hexagon socket screws are used for assembly and disassembly only.

The chuck surface on the small diameter side of the taper bush has tapped holes parallel to the axis. Some of these are tightening holes and some are extraction holes. When the taper bush is placed in its slot in the pulley, the ones that coincide with the holes on the taper bush are used for tightening and the others are used for removal. When the bolts are inserted into the tightening holes and then tightened, they pull the tapered taper bush into place in the pulley and tighten the shaft with great force. To remove, all the bolts are removed and some are inserted into the assembly holes, it is easily removed from the shaft. Do not try to pull this type of pulley in as it may damage the pulley.



6.2.2. Advantages Of Tapered Clamping Element (Taper Bush)

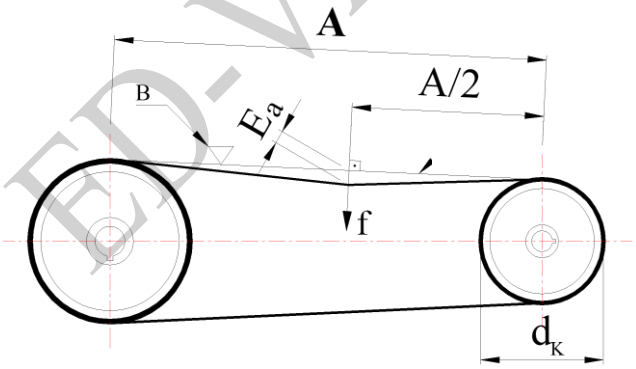
- It eliminates additional operations such as hole machining, keyway drilling in the pulley hub.
- It does not require a shoulder to rest on the shaft. It is tightened in any position on the shaft.
- It does not require qualified personnel as assembly is very simple using a tightening bush.
- Parts such as chuck washers, spacers, bolts, etc. are not required for installation.
- It is also easy to disassemble for maintenance and replacement of parts, and easy to remove during operation. In addition, the absence of additional tools such as pullers, etc. and the absence of hammer blows eliminate all risks.

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6.3.Belt Tensioning

The fan belts must be checked for elongation after 15 hours of operation. This should then be repeated every 3 months. For this reason, or when the belts are replaced for any reason, the belt adjustments should be made as follows.

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

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.

7.1.1. Günlük Bakımlar

- If the bearings are lubricated with oil, check the oil level. If the regular oil level has dropped, refill with oil.
- Check for vibrations and shocks.
- Make sure that the bearings are protected from any moisture.
- 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 fastening bolts (e.g. chassis, bearing and engine 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 period of time. Afterwards, they lose their lubricating properties. Greases should be changed once a year.
- Check the condition of the rotor blades, pulleys or coupling, replace if necessary.

7.2. Lubrication

7.2.1. Greasing

- 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 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 housing of the bearing with grease. See the **Lubrication Diagram** given in section **7.2.3.** for lubrication periods.

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Figure 21 - Opening the Greaser and Bearing for Cleaning

Use of

- **UNDER NORMAL CONDITIONS**
  - ✓ SKF – LGHP2
- **IN HOT ENVIRONMENTS**
  - ✓ SKF – LGHP2

or equivalent 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.

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

Table 7 – Harmful Ingredients

Please contact the company for details about the safety precautions.

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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

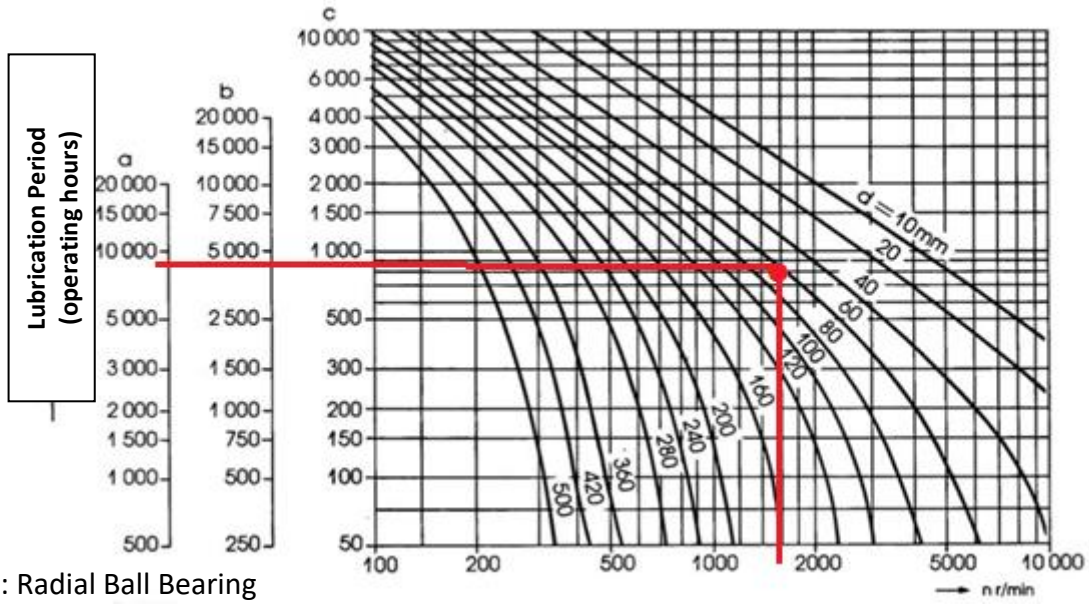
In special fans operated at gas temperatures above 400°C, bearings manufactured with water-cooled casings are used. Collared water connections should be made at the water inlets and outlets with necessary pipe diameters of which systems are located on the bearings. Temperature should be controlled by 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

8. 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. POSSIBLE CAUSES OF CENTRIFUGAL FAN FAILURE (TROUBLESHOOTING)

The following points should be carefully monitored while troubleshooting during operation:

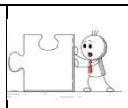
- Fan imbalance,
- Overheating of the bearings,
- Incorrect bearing installation,
- Belt elongation and failure,
- Loosening of the chassis, motor or bearing bolts.

Make sure to consult ED_VAN for any failures marked with!

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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.
Coupling, pulley or fan is mounted on the shaft with too much clearance.	Check the mounting.
Outer ring of the bearing moves in the housing 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 ducts without elastic seals or ducts 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.

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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 housing or bearing moves on the shaft.	Check the bearings; replace the shaft or bearings if necessary.
Fan rubs against the body or inlet cone.	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

ROTOR WEARS OUT FAST.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
There are corrosive gases not specified in the purchase order.	Replace with a fan with proper material quality.
Fan blades wear as there is a leak in the dust filter.	Carry out the periodical maintenance of the dust filter.

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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.
Ducts of filters are not sealed.	Check the ducts and seals.
Problem in the ducts. (Broken, cracked ducts or turned-on valve)	Checks the ducts 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

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.

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FAILURE: 6

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 excessive current.	Review the operating instructions of the motor.

FAILURE: 7

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 ducts. Valve opens suddenly.	Check the ducts and valve.

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FAILURE: 8

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: 9

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.
Air flow rate of the valve is not well set, thus its flow rate is high. Therefore, it consumes too much power.	Set the valve to its design value.
Motor starts with excessive current.	Check the motor nameplate. Replace the motor if necessary.
The motor base is incorrectly mounted.	Readjust the base.
The bearings are overgreased.	Drain the excess oil.
There are foreign materials in the bearings.	Clean bearings, re-grease, replace if necessary.
Bearing not in accordance with nameplate.	Replace with the correct 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.

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FAILURE: 10

ABNORMAL HEATING IN FAN BEARINGS.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
The bearings are incorrectly mounted on the base.	Check the bearing assembly, level it.
The bearings are overgreased.	Drain the excess oil.
There are foreign materials in the bearings.	Clean bearings, re-grease, replace if necessary.
Bearing not in accordance with nameplate.	Replace with the correct bearing.
The bearing adapter sleeves are deformed.	Check the assembly, replace the sleeve if necessary.
There are excessive axial forces in the bearings.	Align the bearings and the shaft.
The belts are too tight.	Check and correct the tension.
The bearing adapter sleeve is overtightened.	Tighten according to the value in the bearing catalogue.
The outer ring of the bearing moves in the housing or the bearing travels on the shaft.	Check the bearings, replace the shaft or bearings if repairs are necessary.

FAILURE: 11

FAN BEARING NOISE.

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.

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FAILURE: 12

ABNORMAL HEATING IN THE PULLEYS.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
The pulleys are out of gauge adjustment.	Check. Carry out gauge adjustment.
The belts rested on the inside of the pulley groove.	Replace the pulleys or belts.
A pulley with the wrong diameter has been selected and fitted.	Check. Replace the pulleys.
Pulleys not complying with the pulley profile in the tag are installed.	Replace the pulleys.
The belts are not tight enough.	Tighten the belts.
An insufficient amount of belts are fitted.	Install belts at correct number and chose proper sizes.
Slippery belts contaminated with oil.	Clean the oil and prevent the belts from getting greasy.

FAILURE: 13

BELTS WEAR OUT FAST.

CAUSES OF FAILURE:	REMEDIES OF FAILURE:
Too much tension on the belts.	Check and correct the tension.
The belts are out of gauge adjustment.	Check. Carry out gauge adjustment.
Pulleys not complying with the original pulley profile are installed.	Check and replace the pulleys.
A pulley with the wrong diameter has been selected and fitted.	Check. Replace the pulley.
Insufficient number of belts and too long belts.	Correct the number of belts and select belts of proper length.

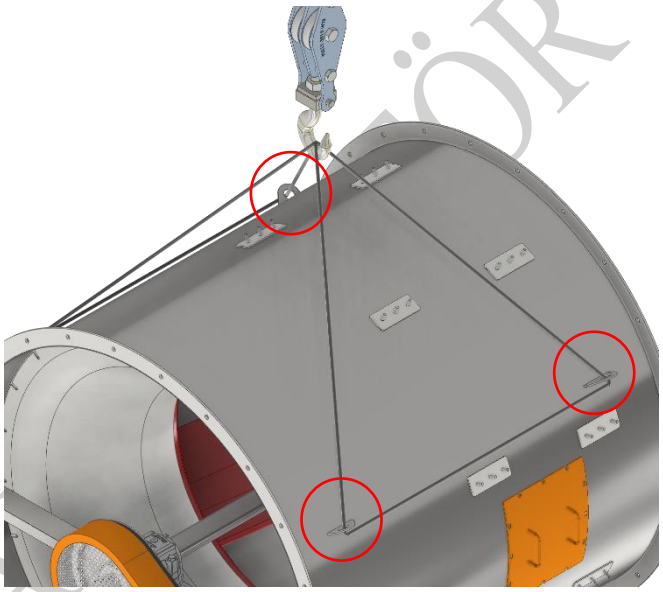
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9. TRANSPORT AND STORAGE

9.1.Transport

Transport the fan from one place to another by attaching the lifting hooks to the lifting lugs on the reinforcement plates.





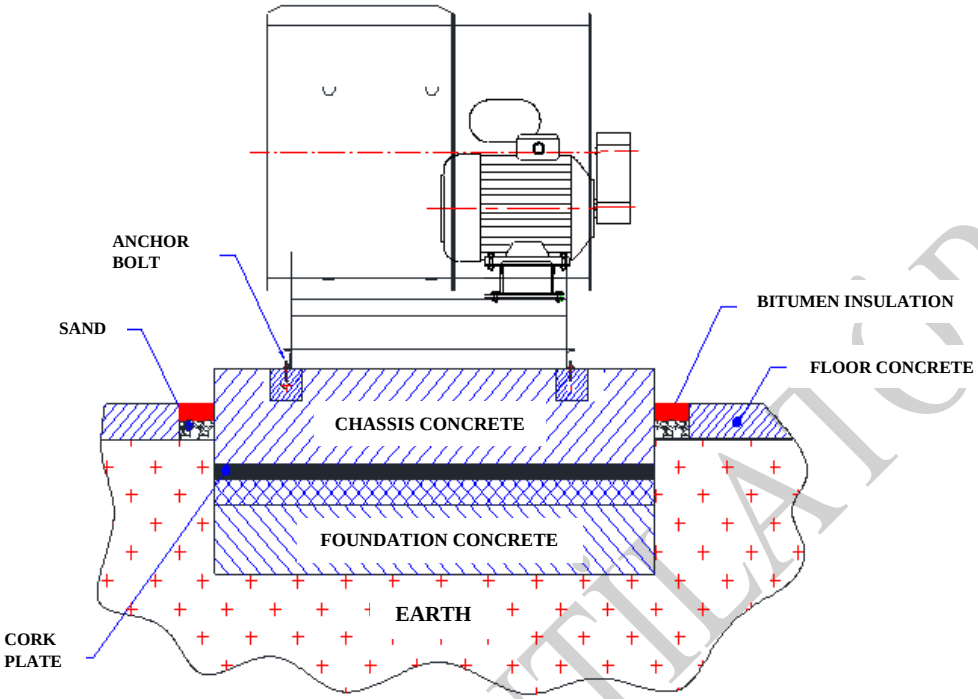
WARNING: In case of relocation, do not ever handle the fan by its sensitive parts (shaft, rotor inlet, suction and exhaust end flanges, drive motor, etc.)

9.2.Storage

- Ideally, store the fan indoors to protect it from weather conditions. It is necessary to protect against moisture, chemical reactions.
- Especially 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.

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9.3. Installation of the Fans



Installation of the Fans on the Floor

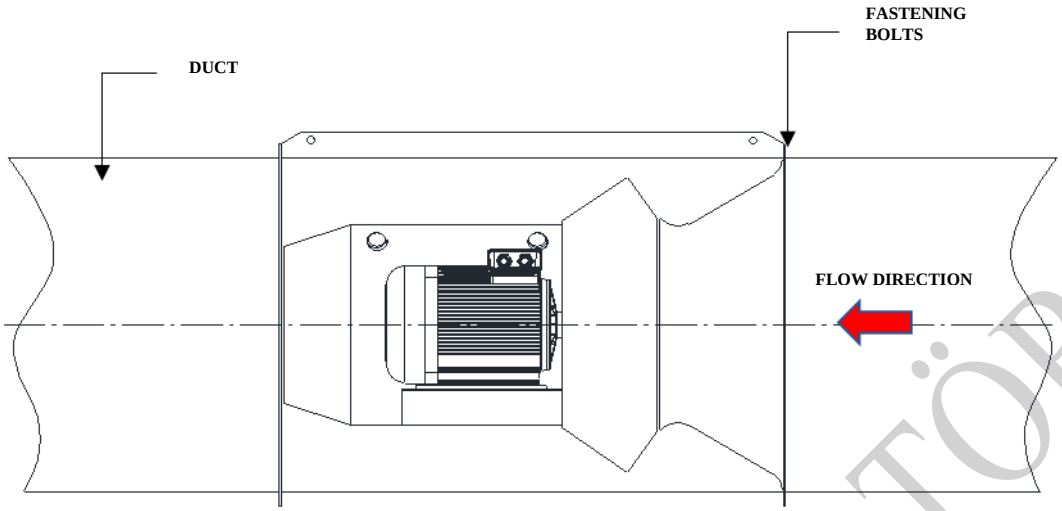
CAUTION: *While placing the chassis of the fans on the concrete floor, it should be detached from the concrete floor.*

- In accordance with the construction technique, the thickness should be between 5 cm and 10 cm.
- A 3-5 cm layer of cork should be laid on top of the concrete foundation.
- Chassis concrete should be poured over the layer of cork and should be 2 to 4 times the weight of the fan, depending on the size of the fan.
- The concrete of the chassis on which the fan will rest should be 10 cm to 20 cm above the concrete of the floor. Wooden wedges should be inserted into the joints to ensure that there are no holes. The foundation should be well dried and set before the fan is installed.

  Once the fan has been placed on the foundation, it should be accurately installed using a water level in the direction of the shaft axis. Once the fan has been correctly installed, tighten the foundation anchor bolts and check again using a water level.

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

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Duct Installation of Ventilators

Connecting the Ventilator to the Air Duct

Mixed flow ventilators are mounted on ventilation ducts with bolted connection.

WARNINGS:

- In locations where foundation and chassis concrete is not used, a common base with anti-vibration mounting should be used.
- If it is unfavourable to transmit vibrations to the intake and exhaust ducts, flexible canvas or flexible compensators can be fitted to the intake and exhaust ducts.
- Do not strike rotating parts such as the fan, shaft, bearings, motor, etc. with a hammer or similar hard tool during installation.
- If the fan is to be installed outdoors, it must be protected against rain and external factors.
- If it is likely that water will accumulate in the fan, drill a drain hole in the base and ensure that the water is drained off using a hose connected to this hole.

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