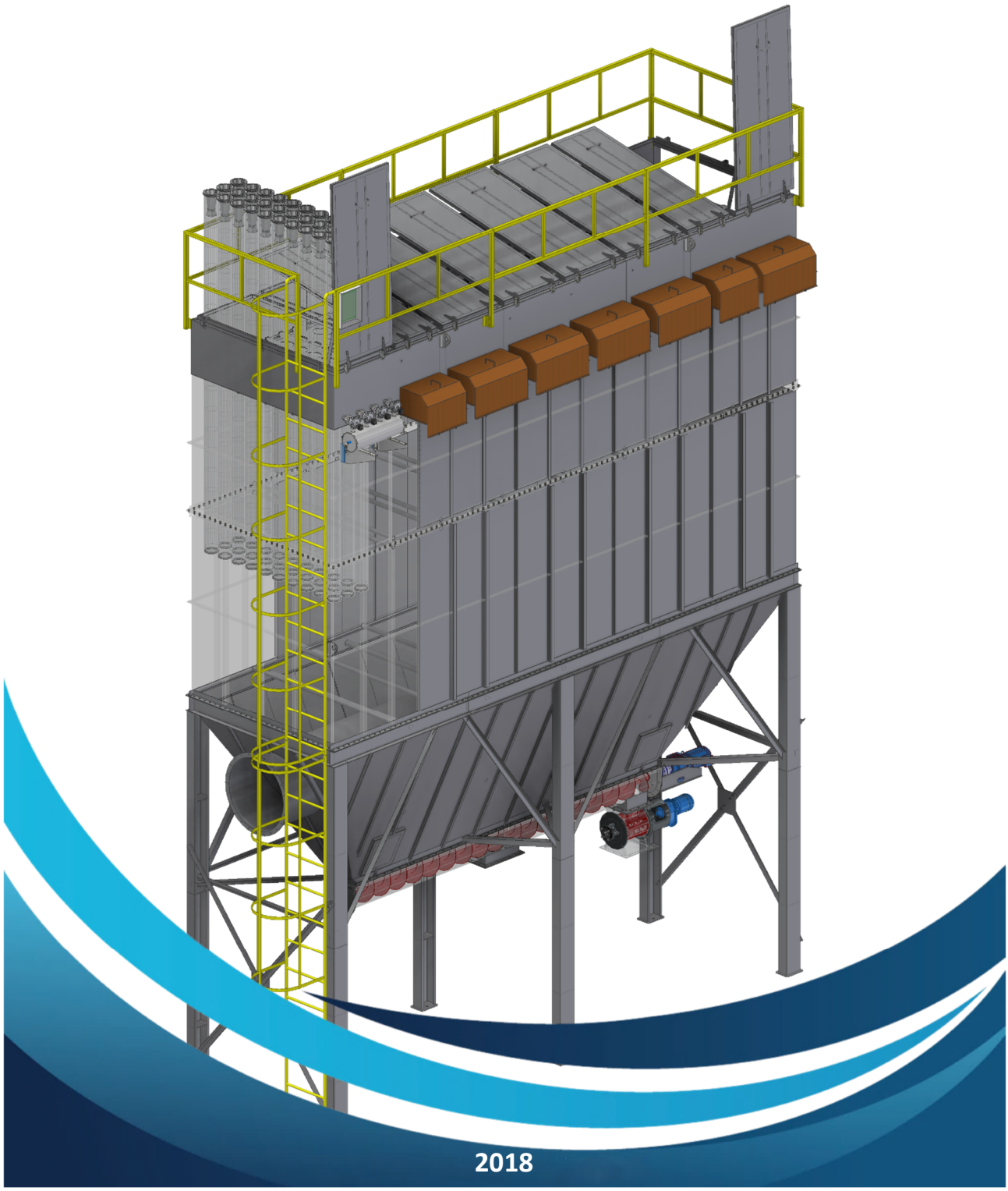
JET FILTER

OPERATING and MAINTENANCE INSTRUCTIONS



2018

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ED-VAN VANTİLATÖR

1.INTRODUCTION

ED_VAN provides services in the solution of any and all dedusting and industrial-type ventilation problems with its specialised technical staff members. Our company has been established over an area of 19.500 m^2 since 1975 and maintains its operations in an indoor area of 8.000 m^2.

ED_VAN products may be applied in all areas of the industry and are manufactured in compliance with the national and international standards and norms with a view to protect the consumer in each and every area of industry. Any and all products manufactured by our company are designed, projected and manufactured at its own production plants by its own team.

Our R&D group continuously follows up any technological developments without sacrificing our quality. Tests on our fans are performed in the light of the technological developments at our Edremit factory. The test results and test diagrams obtained as a result of such tests are available with our company and our customer may be provided with them upon request. Quality controls are carried out on the products at each and every stage prior to both production and shipment and we thus identify and control all problems which may occur in our products in advance.

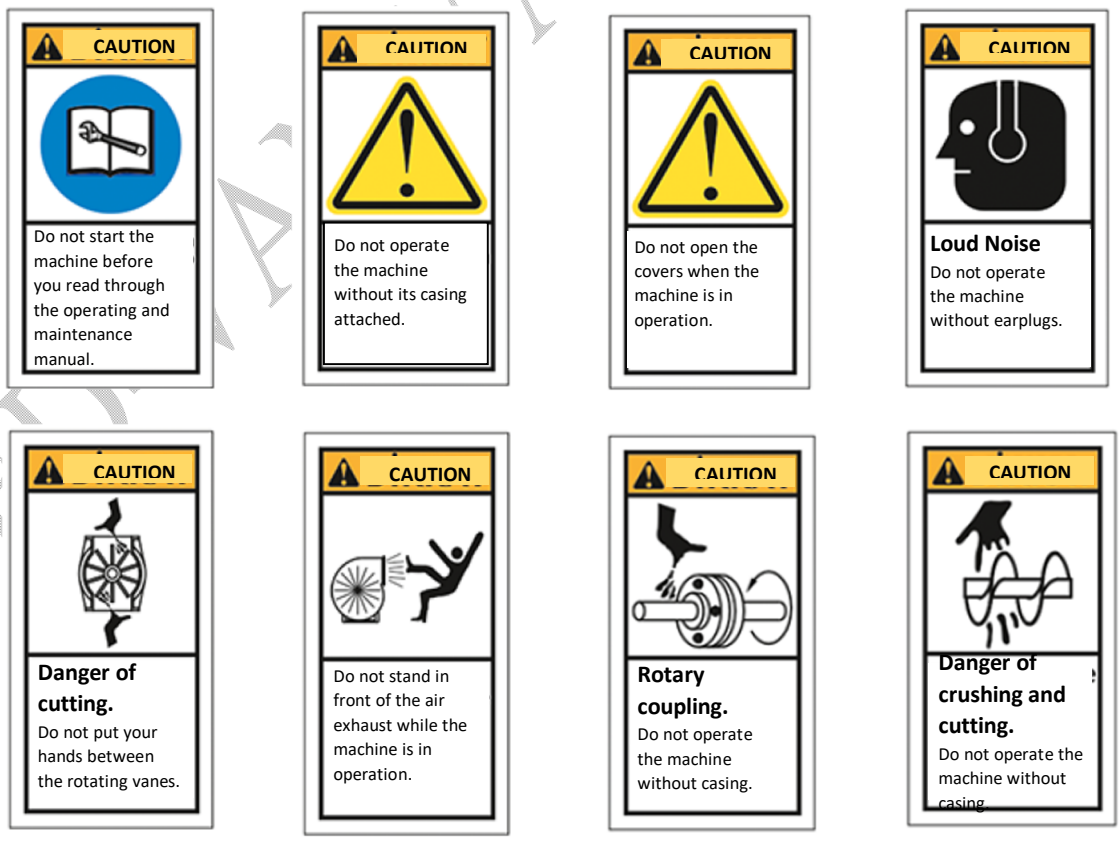
Your compliance with these operating and maintenance instructions will ensure trouble-free operation of our product at your business concern.



2.SAFETY PRECAUTIONS

- Filter system should only be operated by licensed and experienced technicians.
- Operating instructions should be well known prior to operation.
- Safety precautions should be checked.
- Electrical systems should be checked.
- One should contact the copper plate with bare hands for earthing purposes prior to operation.
- One should make sure that the maintenance covers are sealed.
- Power consumption should be checked. Max. power should not exceed the permitted power.
- Electronic card and valves should be checked once the filter has started to run.

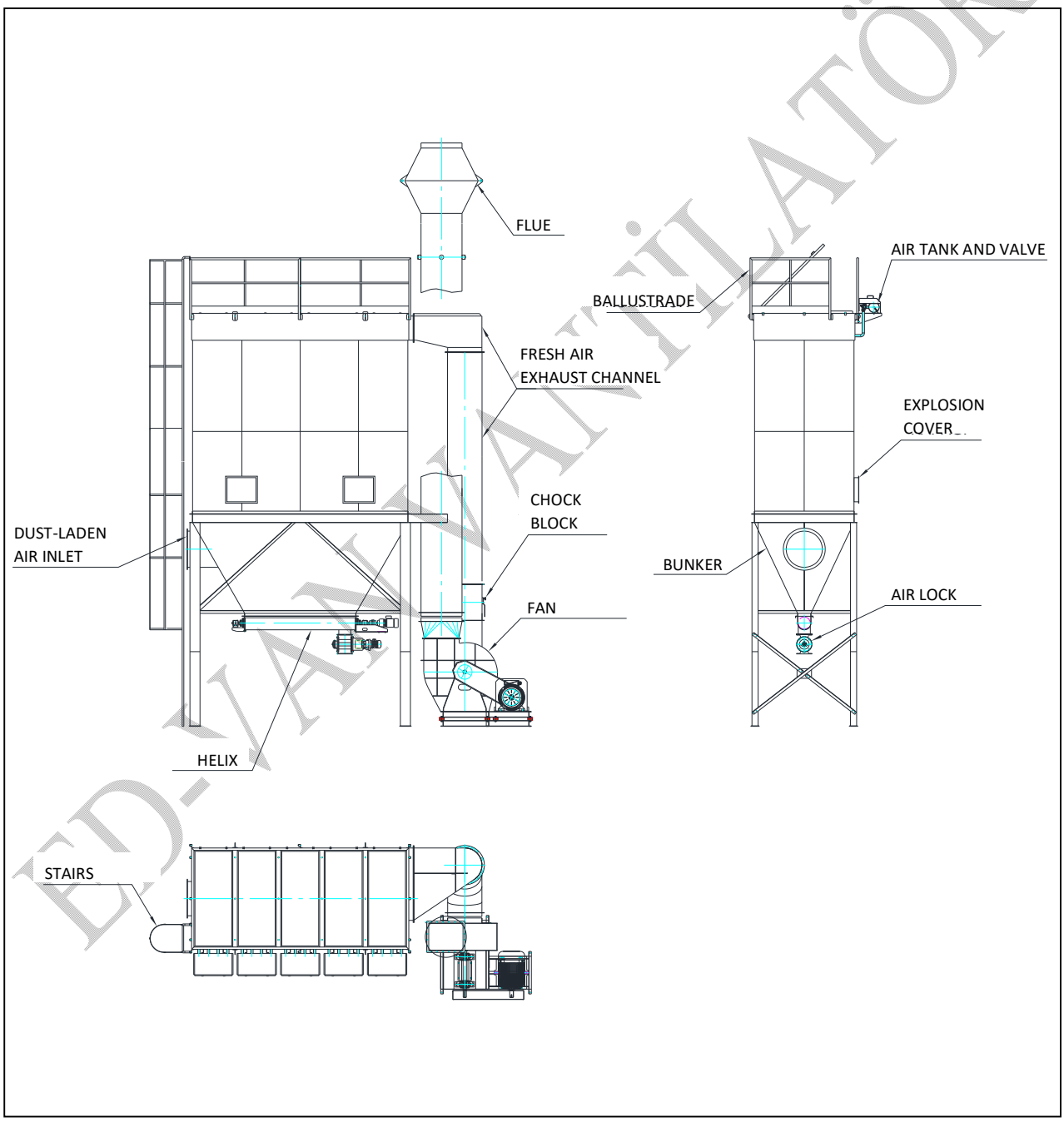




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3.DESCRIPTION and GENERAL COMPONENTS OF JET FILTER

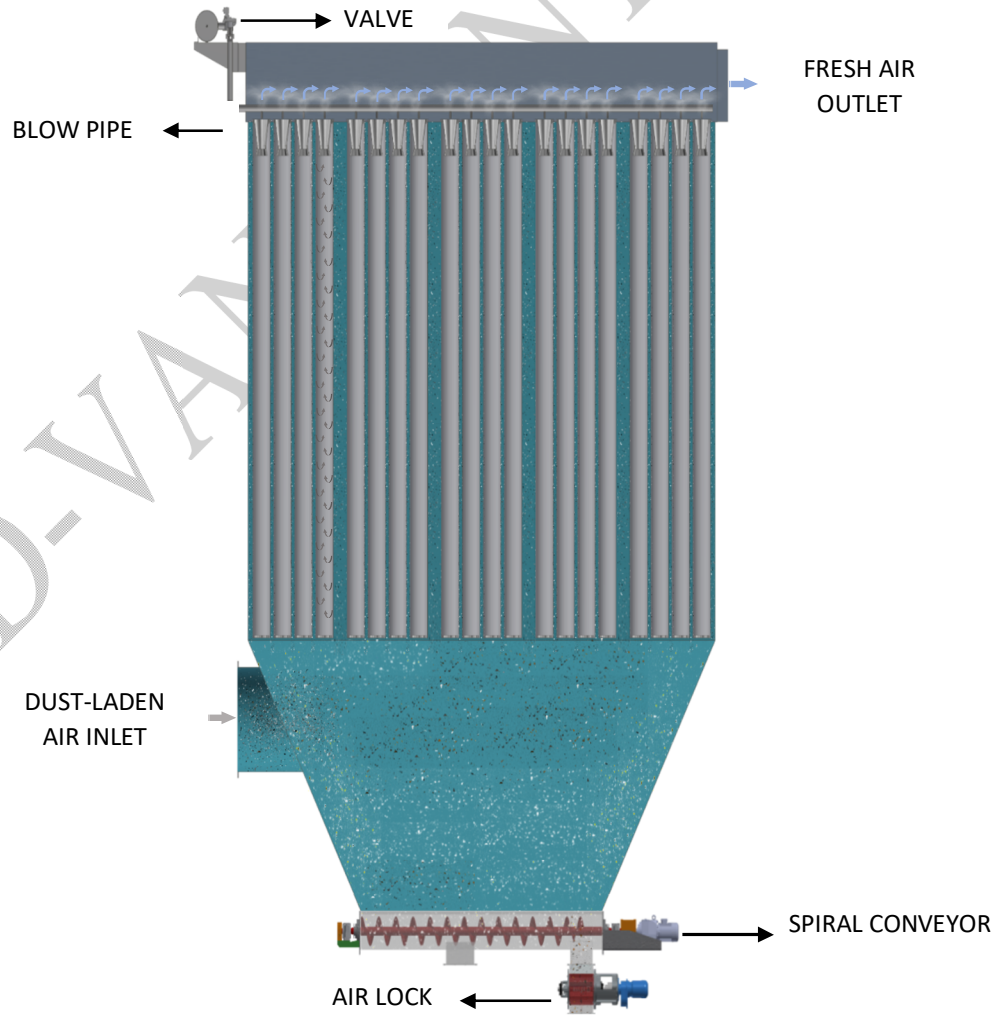
Jet Filter is dedusting equipment satisfying the industrial-type filtration requirements in a wide range in which cage-supported standard and specific polyester cloth bags as well as cartridge filters are used. It should only be used for dry type dusts.



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3.1.OPERATING PRINCIPLE OF JET FILTER

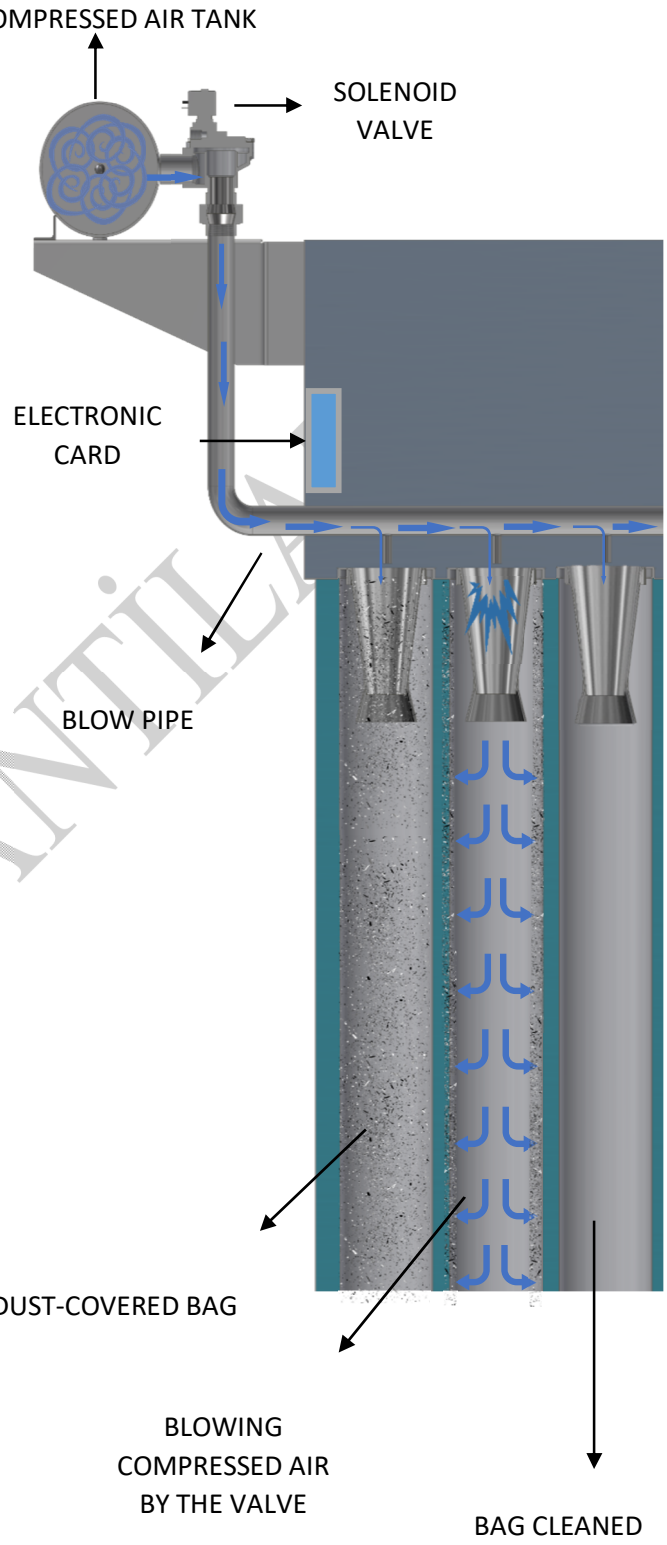
- Dust-laden air enters the system through such places as bunker, etc. under the filter body.
- The air moves in the direction of the filter bags. In the meanwhile, dust particles sick to the outer surface of the bag.
- Fresh air passing from the bag surface on to the bag cages passes through the upper side of the filter and is discharged from the exhaust of the fan.
- During the dust retaining process, dust forms a layer on the outer surface of the bags. This layer carries out an efficient filtration process.
- Dust accumulating on the outer surface is caused to fall down by the compressed air blown into the bags (see page 7).
- Blowing of the compressed air into the bags is controlled by an electronic card. By this card, time to blow into the bags and the times to pass from valve to another may be adjusted either manually of automatically.
- During operation, a certain section of the filter area is exposed to a short-term cleaning process. As a result, the determined flow rate of the system does not change.
- Bag cleaning process should not cause the fine dust layer formed on the bag surface to be cleaned. Control of the compressed air by the electronic card should be adjusted by the operating regime.



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3.2.CLEANING OF THE BAG

- Solenoid valves are energised by periodical signals from the electronic timer circuit for very short adjustable periods of time and the compressed air is sent to the blow pipes by means of the solenoid valves.
- Compressed air is blown into the venturis through the holes on the blow pipes at very high speeds.
- While passing through the venturis, the high-speed compressed air (6-7 bars) creates a secondary air a few times bigger than its own volume.
- In other words, the compressed air blown via the venturi at so high a pressure and speed is vacuumed into the bag together with the air in the fresh air compartment.
- With the combined effect of these two airs, so sudden and short pressure increase occurs in the fresh air compartment of the filter.
- And this creates an air current in the reverse direction between the bag fibres and ensures the dust to be ejected from the bag, thus cleaning them.



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3.3.SAFETY VALVE AND WATER RETAINER



SOLENOID VALVE

COMPRESSED AIR TANK

SAFETY VALVE

BLOW PIPE



6-7 BAR COMPRESSED AIR INLET

WATER RETAINER WITH REGULATOR

EXPLANATION

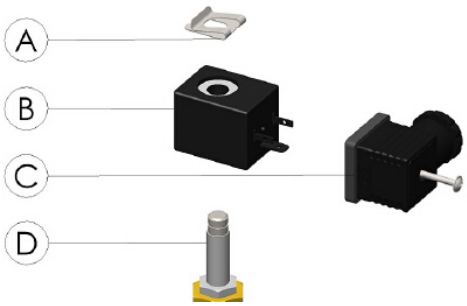
3.4.DESCRIPTION AND PROPERTIES OF SOLENOID VALVE

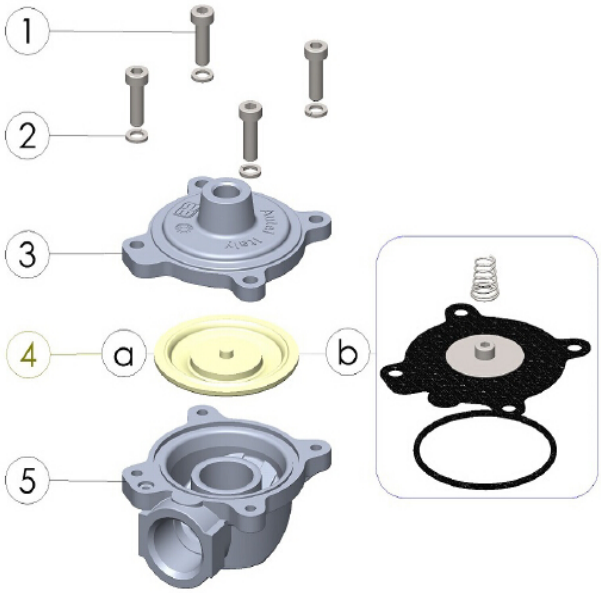


Electromagnetic operated by electric power and used to control the passage of various fluids such as water, air, gas, etc. is called a “solenoid valve”.

Coil is provided with electric power so that the diaphragm piston in the valve may move. When the electric current moves in the coil, the latter becomes an electromagnet and moves the diaphragm piston depending on the use of the coil. Thus, the inlet duct starts pushing the compressed air in the direction of the outlet. And when the signal discontinues, the valve resumes its initial position and prevent the passage of the air.

NO	PART NAME
A	Clips
B	Coil
C	Fastener
D	Pilot
1	Bolt
2	Washer
3	Cover
4a	STD Diaphragm
4b	HT Diaphragm kit
5	Body





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3.5.FILTER COMPONENTS

Bag Filter Components



Areas of use of the bag filters vary from process to process. Please find here below the table showing some properties of the widely used fibres.

Scrim and Fibre Type	Continuous Operating temperature (Max) *	Designation	Hydrolysis Resistance	Resistance to Acids	Resistance to Alkalis **	Resistance to Oxidation
Polypropylene	90°C/(95°C)	PP	excellent	excellent	excellent	restricted
Polyamide	110°C/(115°C)	PA	restricted	restricted	good	restricted
Polyacrylonitrile Copolymer	115°C/(120°C)	AC	restricted	restricted	good	good
Heat-Resistant Olefin	125°C/(135°C)	RO	excellent	excellent	excellent	restricted
Polyacrylonitrile Homopolymer	125°C/(140°C)	DT	good	good	good	good
Polyester	150°C/(150°C)	PE	restricted	good	restricted	good
Polyphenylene Sulphide	190°C/(200°C)	PPS	excellent	excellent	excellent	restricted
m-Aramid	200°C/(220°C)	NO, NX	restricted	restricted	restricted	good
Polyimide	240°C/(260°C)	PI	good	restricted	restricted	good
Polytetrafluorethylene	250°C/(280°C)	PTFE, TFL	excellent	excellent	excellent	excellent

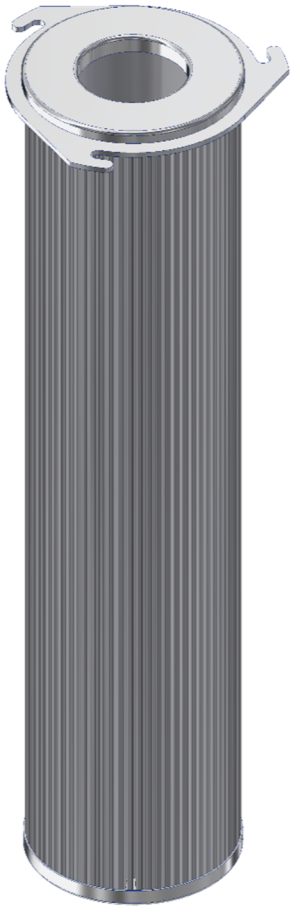
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* Conditions of chemical gas flow may require the maintenance of a lower continuous operating temperature.

** Particularly under the dew point and in case of operation with harmful gases.

3.6.FILTER COMPONENTS

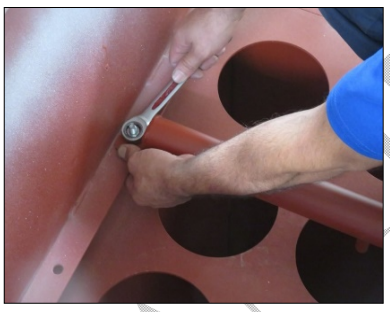
Cartridge Filter Components



Jet filter: cartridge type components enter the industry as another filter component at an increasing rate in the present day. Companies manufacturing such components compliant with the types of dust in the industry are recommended to design the filter in compliance with the technical operating conditions of the products they manufacture. We, ED.VAN , use such products in our jet filter models.

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3.7.BAG REMOVAL STAGES

1  Remove the top covers of the filter.	2  Lift the cover.	3  Secure it.
4  Remove the blow pipe.	5  Unscrew the connecting bolt of the blow pipe from its place.	6  Remove the blow pipe from its place.
7  Take of the bag cage pulling it upward	8  Slightly bend the part with retaining ring on the neck of the bag inward and release the retaining ring and take it out by pulling it upward.	9  Slightly pull the bag upward.

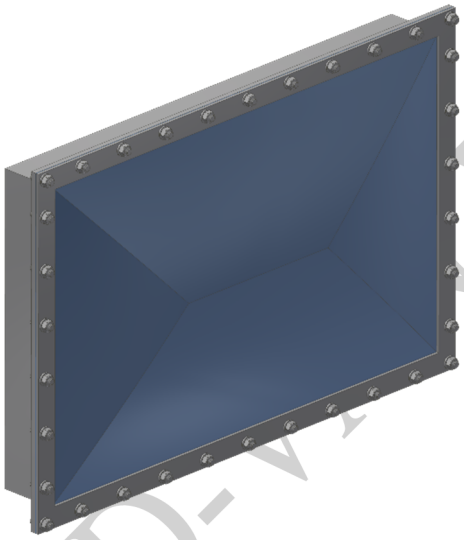
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3.8.EXPLOSION COVER

Explosion covers ensure the prevention (minimisation) of the unforeseen results of the chemical and petroleum-derivative inflammable dust which will be caused by an enormous explosion which may occur due to high pressure occurring within the filter body. However, what should be remembered at all times is that they never prevent the explosion itself. What they prevent is the possible unforeseen results of explosion.

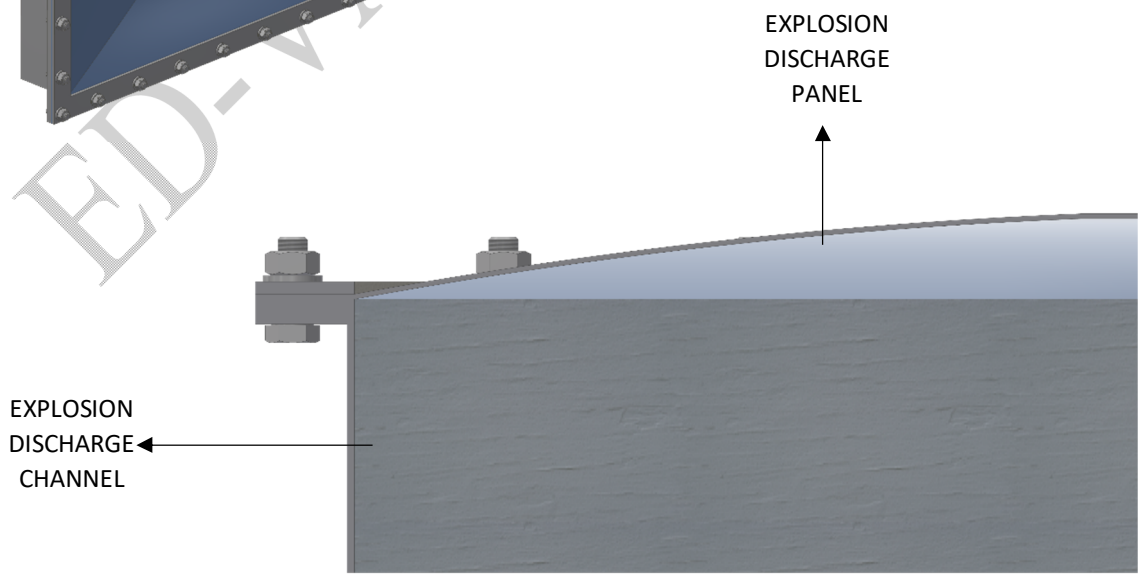
Systems preventing explosion are those inertization systems of more complex structure which possess a control mechanism.

Explosion covers ensure the system to be opened to the atmosphere in a controlled manner due to various reasons such as the fact that the pressure remaining in an enclosed space goes out of the controllable limits, that the relief valve is not sufficient, that the filter (if any) is deactivated, that the flash point of the process is low as well as any other relevant physical and chemical properties. Briefly, we can call it securing the explosion and bringing the enclosed space to atmospheric conditions.



Why Explosion Cover?

Consequences of the damages caused on human beings, environment and workplaces may be much greater and unrecoverable when one considers the damages which will be caused by other occupational accidents in the working life. Therefore, occupational safety is an issue that should not ever be overlooked. And this brings about the use of an explosion covers in the dangerous or risky processes.



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NOTE: *Each explosion cover application takes place in a project by calculating the characteristic of the dust and the dimensions of the filter.*

Control of ambient conditions

- Safety zone is established around the explosion vent (safety zones dimensioned by EN 14491 and 14994).
- Explosion zone is suitable for opening the explosion cover.
- Explosion zone is cleared of supports, pipes and other objects.



IMPORTANT
WARNING

- System / process is shut off and pressure reduced.
- Details in the label of the explosion cover match the necessary technical specifications.
- One makes sure that any additional assembling frame has been used for fixing.
- Dimensions of the rectangular explosion cover match the clearance in which installation shall take place.

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3.9.ELECTRONIC CARD



- Microprocessor-Based
- 2x16 LCD Screen
- Turkish-English Language Selection
- Industrial IP65 Case
- Long-Life Transistor or Triac output
- Capability to Determine Desired Output Intervals
- Maximum 2 Solenoid Valves May Be Connected to an Output.
- Adjustable Shocking Time (0 – 300 sec)
- Adjustable Pulse Time (100 – 1800 ms)

PROPERTIES

It is not necessary to use an extra transmitter to measure the differential pressure.

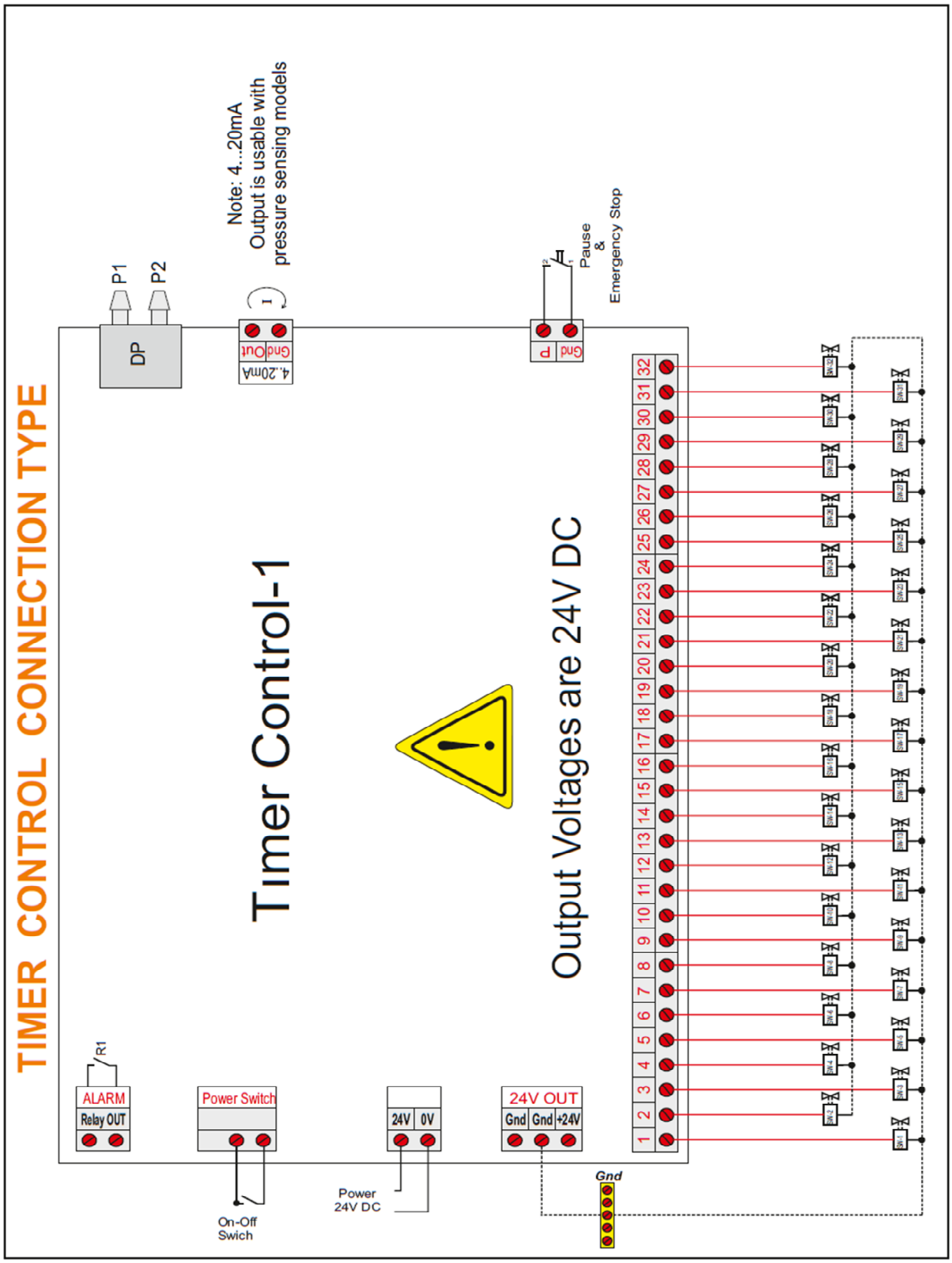
It shows the differential pressure on the screen.

Alarm annunciator relay.

Differential pressure significantly prevents the air consumption depending on the location where it is used.

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3.10.ELECTRONIC CARD CIRCUIT DIAGRAM

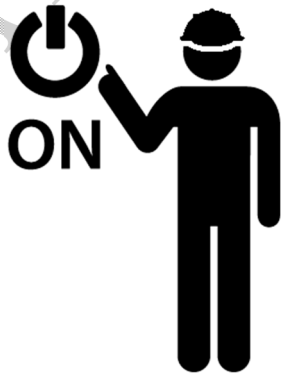


4.ACTIVATION OF THE SYSTEM



Before Starting to Operate;

- Check whether or not there is any leakage in the air ducts and the filter body.
- Check the compressed air connection. Ensure it to be 6 - 7 bars.
- Check in turn whether or not the electronic control connections control.
- Check the direction of rotation of the fan.
- Check that the line to the electronic control is 220V-50Hz.



On Starting to Operate;

- Valve on the suction side of the fan is shut off.
- Start the fan for a short time and check whether or not there is any friction, etc. due to defects which may occur in installation.
- The fan is started. Once it has been run at full speed, the valve at the suction side of the duct is gradually opened and adjustments are made at the suction inlets.
- Pollution of the filter is checked by means of a U-gauge (Section 03 – pos. 18) or by means of electronic devices installed in the system which give pressure differences. (Such pollution should be 50-150 mmSS depending on the bag type and dust composition.)
- In order to reduce the pressure resistance, compressed air should be increased to 6-7 atu in filter pulsing. For a better cleaning and in order to keep the pressure difference at a lower value, the time between two pulses is shortened and pulsing is carried out more frequently. Prolongation of the time between 2 pulses ensures that compressed air consumption is reduced and the life of the bags extended.

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5.MAINTENANCE INSTRUCTIONS

- Filters are products which require little maintenance. As there is no mechanical components in the pulsing system, there is no need for lubrication. However, such auxiliary components as screw conveyor (helix), rotary valve (air lock) and fan in the filter bunker require lubricating.

- Metal parts should be painted against corrosion.

- If reduction is observed in suction after a certain period of time, pollution (clogging) has increased in the bags. In such cases, cleaning operation may be carried out efficiently by stopping the fan but running the pulsing system on no-load basis and without washing in order to clean the bags.

- In the maintenance of diaphragm valves (see page 9):
- 1.Check the coils.
- 2.Check the cables to the coils.
- 3.Check that the compressed air is dry and oil-free.
- 4.Remove the screws of the valve and check whether or not there is any tear or dirt which prevents shutting in the diaphragm in case valves continuously remain open.
- 5.Clean if there is any dirt; replace the diaphragm or valve with a new one if there is any tear. As it is usually the high pressure that causes diaphragms to explode, the pressure should not be permitted to rise above 8 atu.
- 6.Check the tension of the spring pushing the valve diaphragm and replace the spring with a new one if it fails to apply pressure on the valve.

- Cleaning and repair of the filter bag (see pages 11-12):
- Under normal operating conditions and under continuous operating conditions, filter bags do not require manual cleaning. No maintenance is required in the units selected at minimum speeds in accordance with the conditions. However, any errors made at the time of installation and at the maintenance stage may lead to maintenance and replacement needs. In case of any distortions and continuous clogging occurring in the bags in long-term operations, it is recommended to replace all the bags in the unit instead of cleaning the bags manually and replacing them individually.

- Replacement of the Diaphragm (see page 9):
- Hold the two parts and remove the cover bolts of the diaphragm. Lift the cover and replace the diaphragm.

CAUTION: While lifting the cover, pay attention that the spring and the small slotted pin will not fall.

- Solenoid Valve:
  - Loosen the bolt on the coil and pull the coil group out.

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- Remove the bolts carefully and remove the pilot group from the pilot body.
- Clean and replace the hung parts. Place an order for your spare parts needs.

CAUTION: Do not overtighten the bolts of the solenoid valve during the installation. If you do, the shuttle causes the bottom of the shell to break or distort. And as this will cause the shuttle and the spring to get jammed, they will not run functionally.

- See the fan operating and maintenance instructions for the fan.
- See the helix operating and maintenance instructions for the helix.
- See the air lock operating and maintenance instructions for the air lock.

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6.TROUBLESHOOTING ?

Inspections to Be Carried out Prior to Startup:

- Inspection of the air ducts and all connections.
- Inspection of the electric, compressed air connections and 220V electric line delivered to the electronic card.
- Inspection of the direction of rotation of the extractor fan.
- Inspection whether or not the compressed air reaches the system at 6-7 atu.

1. If suction reduces after a certain period of time,

- Open the maintenance covers on the bunker body and check the state of pollution of the bag with a torch (light).
- Open the maintenance covers of the dirty bags and first remove the cage and then the bag itself and clean them with compressed air and re-install them.
- Check whether or not the air delivered at the time of pulsing causes shock on the bags via the valve. If it does not, then the water accumulated in the water separator is above the required level. Discharge such water and ensure the air to pass.
- If the air pressure is too low, ensure that it reaches 6-7 atu.
- Check the suction pipes, ducts and valves (if any). Clean dirt and accumulations.
- The direction of rotation of the fan may be reversed. Correct the direction of rotation of the fan.
- There may be loosening and slipping in the fan belts. Check them.
- Valves may malfunction. Check them.
- There may be air leakage in such parts as ducts, maintenance covers and air lock. Check them.

2. If the system leaks dust:

- Remove the bags and check them individually. Replace any punctured bags with new ones. If there are too many bags to be replaced, replace the whole set.
- If the air lock fails to release the dust, check whether or not the air lock malfunctions.
- If dust comes out of the fan flue, there may be punctures in the filter bags. Check the bags.
- If there is vibration in the fan, dust may have stuck to the fan blades. As the dust so sticking will form a balance, there will be vibration. Open the fan maintenance cover and clean the blades.

3. If the pressure of the air in the pulsing system is continuously low:

- Solenoid valve may have been left open. Check and clean it. Particularly check the shuttle spring system.
- There ***may be*** a short-circuit in the connections, the valve***s*** may be open continuously.
- There is a fault in the signal coming from the electronic control panel.
- There may be erroneous connections or leakage in the compressor or ducts.
- Minimum pressure is 3 atu for the shut-off of the solenoid valves. Too long compressed air pipes following the shut-off valve may fail to provide the necessary shut-off pressure of 2 atu.

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- Install the compressed air tank and shut-off valve next to the dust collector.

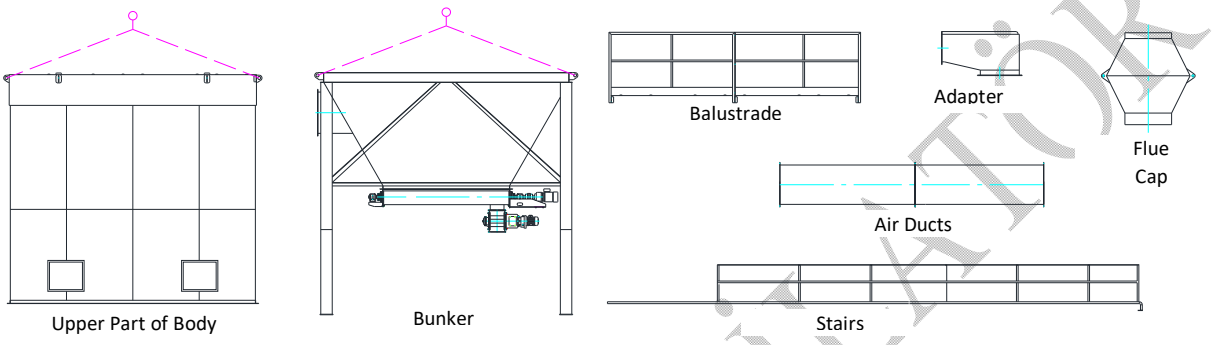
4. If there is any problem in the filter bags (dulling, short life, etc.)

- Check the operating humidity. If the humidity is lower than the operating humidity, then it causes static electricity.
- If the humidity is higher than the operating humidity, the dust will stick to the outside of the bag. Check the humidity of the bags.
- Check whether or not dust material sticks and accumulates in the bunker. Rise of the material up to the filter bags causes damage in the bags.
- Bag cages may have been installed incorrectly. In this case, friction between the cage and the bag or friction of two bags with each other or friction of the bag with the outer body causes problems. Vertical spaces between the bags should be checked.
- Abrasion occurs as a result of the hitting of the dust particles coming at high speed on the bags. Check the dust-laden air inlet and the guide plate. Replace them if there is any abrasion or deterioration.

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7.TRANSPORT AND STORAGE

7.1.Transport: In order to transport the filter from one location to another, detach the filter at its seams. Carry it by the carrying hooks installed on each part or by attaching the carrying hooks to the holes in the resistance fish plates.



Caution: In case of transport, do not ever carry the filter by its critical parts (unremoved covers, adapter, balcony and balustrades, etc.).

7.2.Storage: Our company may not be held responsible for any damages to be caused once the means of transport has entered the working area of the customer and for those which will arise from the storage to take place at the customer's plant.

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