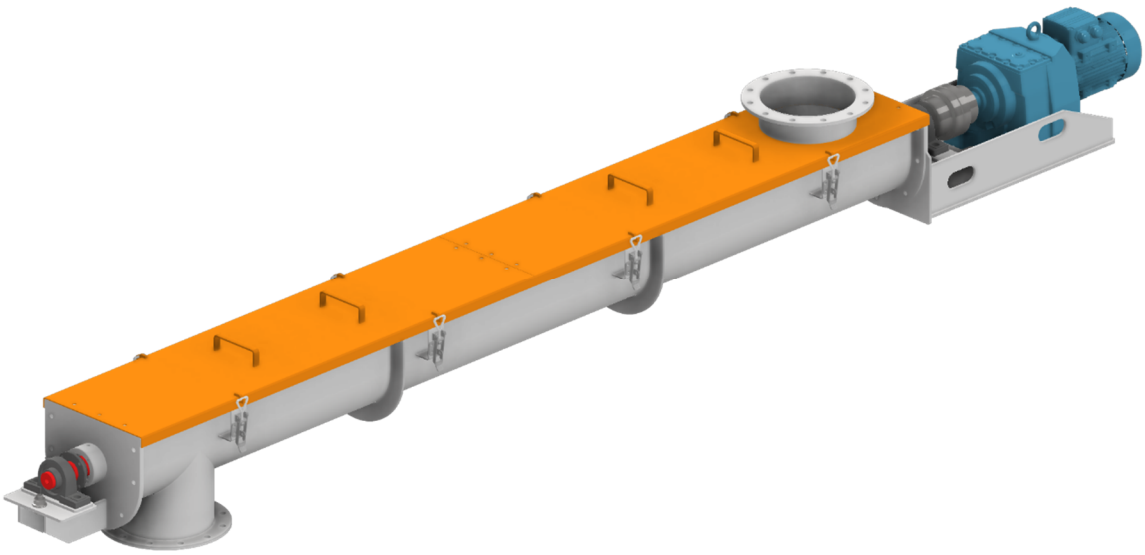
OPERATION AND MAINTENANCE MANUAL

FOR SCREW CONVEYORS



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TABLE OF CONTENT

1.Introduction 3
1.1. Information about this Manual 3
2.Safety Measures 4
3.Warranty 5
4.Description of Screw Conveyor and Related Terms 6
5.Parts and Accessories of Screw Conveyor 7
5.1. Parts List 7
5.2.Accessories 8
5.2.1. Speed Sensor 8
6.Commissioning and Operating 9
7.Maintenance and Lubrication 10
7.1. Maintenance 10
7.1.1. Monthly Maintenance 10
7.1.2. Annual Maintenance 10
7.2. Lubrication 11
7.2.1.Greasing 11
8. Operational Troubleshooting, Causes, and Solutions 12
9.Transport and Storage 15
9.1.Transport 15
9.2.Storage 15
9.3.Installing the Screw Conveyor 16

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1.INTRODUCTION

ED-VAN VANTİLATÖR SANAYİ VE TİCARET LTD. ŞTİ. provides services in solving all kinds of dedusting and industrial ventilation problems with its expert technical staff. Our company has been established in an area of 19.500 m2 in 1975 and continues its activities in a closed area of 8.000 m2.

ED-VAN products used in all areas of the industry are manufactured in accordance with the national and international standards, taking into account the consumer protection principle. The design, planning, and manufacturing procedures of all kinds of products produced by our company are carried out in its own production facilities and by its own team.

Our R&D group continuously follows technological developments without compromising our quality. In the light of technological developments, tests of ventilators are carried out in our Edremit factory. The test results and test diagrams resulting from these tests are available in our company and are given to the customer upon request. We control all the problems that may occur in our products in advance, by making quality controls at every stage of the production before both manufacturing and shipment.

We declare that we produce our products in accordance with the requirements of;
-CE,
-TSE,
-ATEX,
-OHSAS 18001,
-ISO 9001:2008,
-ISO 14001:2015

WARNING:

Complying with the operating and maintenance manual will ensure you work uneventfully.

1.1. INFORMATION ABOUT THIS MANUAL

- Read this manual before installation, commissioning and maintenance to ensure safe working and trouble-free operation of the product.
- Observe the safety and warning instructions on the product and in this manual.
- This manual is part of the specified product and must be given to the customer with the product when it is sold.

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2.SAFETY MEASURES

To prevent injury, fire and other hazards from improper use of the equipment, follow these instructions.

- Screw Conveyor system instructions should be followed by trained and experienced staff.
- Safety measures must be checked.
- Electrical systems must be checked.
- Screw conveyors must not be operated unless all covers/guards of the conveyor and its drive unit are in place.
- Feed openings shall be constructed in such a way that the screw conveyor opening is covered and does not create a safety hazard. If a grating cannot be used, then the exposed section of the screw conveyor is to be guarded by a railing or a fence with a warning sign posted.

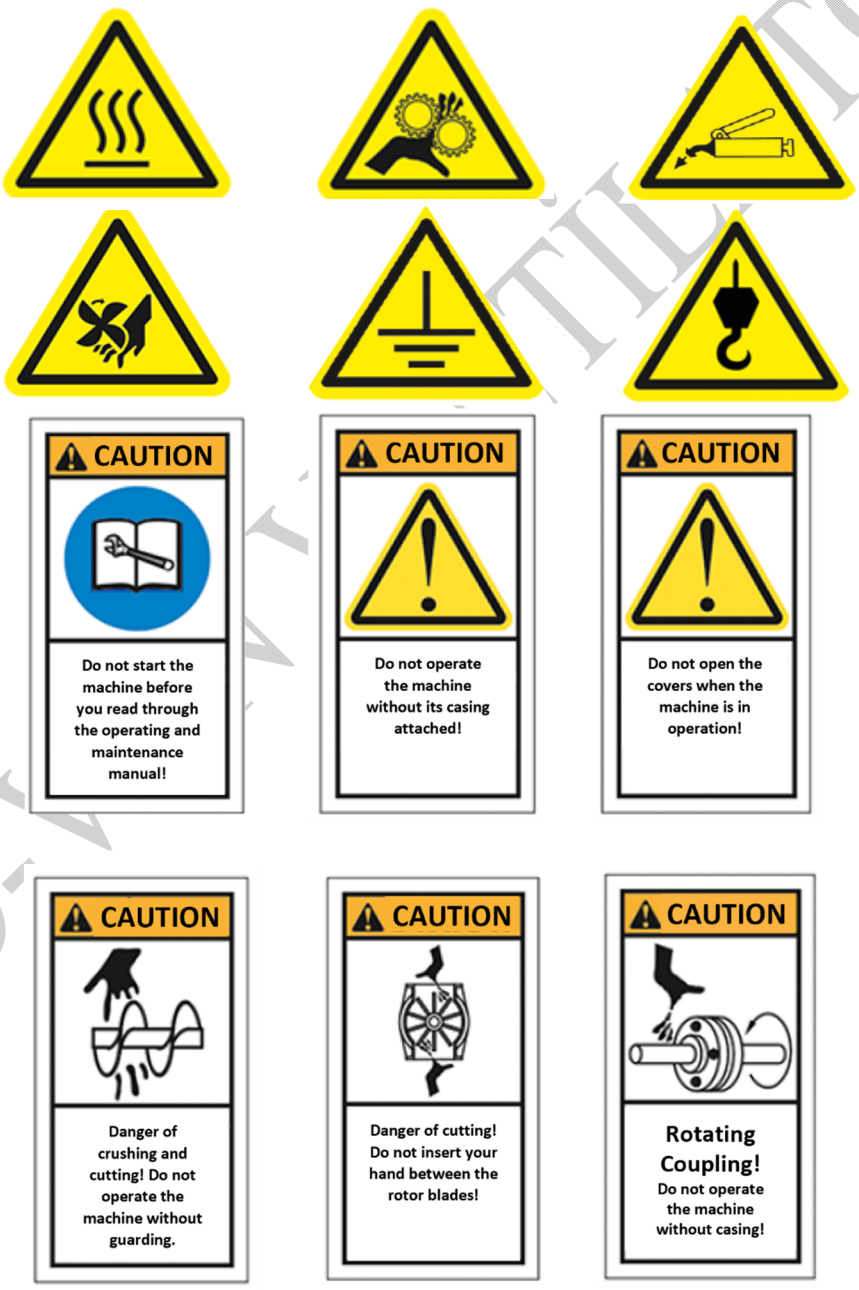


Figure 1 - Safety Symbols

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- Do not place hands, feet or any part of the body in the screw conveyor.
- Do not use the screw conveyor for any other purposes other than intended.
- Do not use a bar or stick to feed material to the screw conveyor.
- Do not walk on the screw conveyor or its covers and guards.
- A copper plate should be touched by bare hands before starting operation in order to prevent an electrostatic discharge on the equipment.
- Power consumption should be monitored. Maximum power must not exceed the allowable power.
- Before any maintenance and cleaning, the power to the motor must be cut off.
- While the screw conveyor is working, operations such as maintenance, repair, and adjustment should not be carried out.
- After starting, it should be checked if there is any noise, vibration, or abnormal situation.

3.WARRANTY

- Our products are under a 1-year warranty as from the date of invoice against material and manufacturing defects; except for motor failures, wear, and misuse.
- The supply of material for overseas sales (EXW) is within the scope of warranty, and the service will be charged separately.
- The warranty period continues, provided that the delivered products are used and commissioned within a maximum of 120 days. Otherwise, any malfunction that may arise from waiting is out of warranty.
- Items not included within the scope of warranty by the seller:



(a) Defects caused by the failure to provide the appropriate installation environment for the product,

(b) Damages arising from the use of the product for purposes other than for which it was purchased,

(c) Damage caused by disasters such as fire, flood, wind, and lightning,

(d) Damage caused by unapproved additions and modifications;

(e) Any abuse and / or misuse by the purchaser, including improper assembly;

(f) Products damaged or altered by the buyer and / or their customers; or

(g) Performance problems caused by incorrect information.

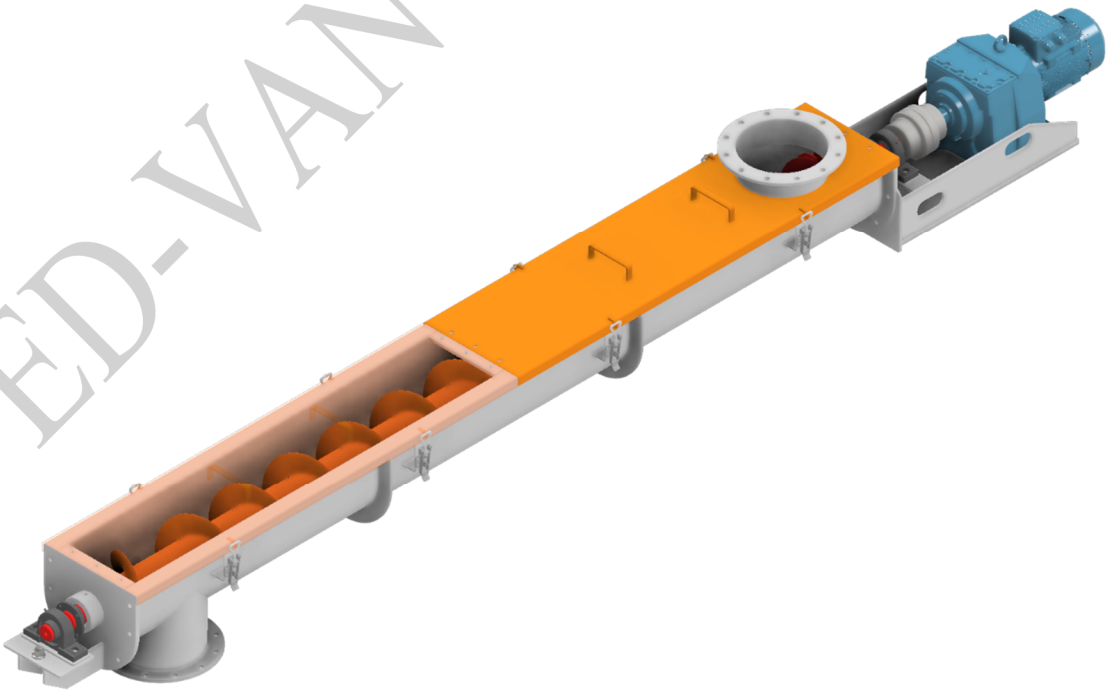
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4.DESCRIPTION OF THE SCREW CONVEYOR AND RELATED TERMS

Product Description and Terms

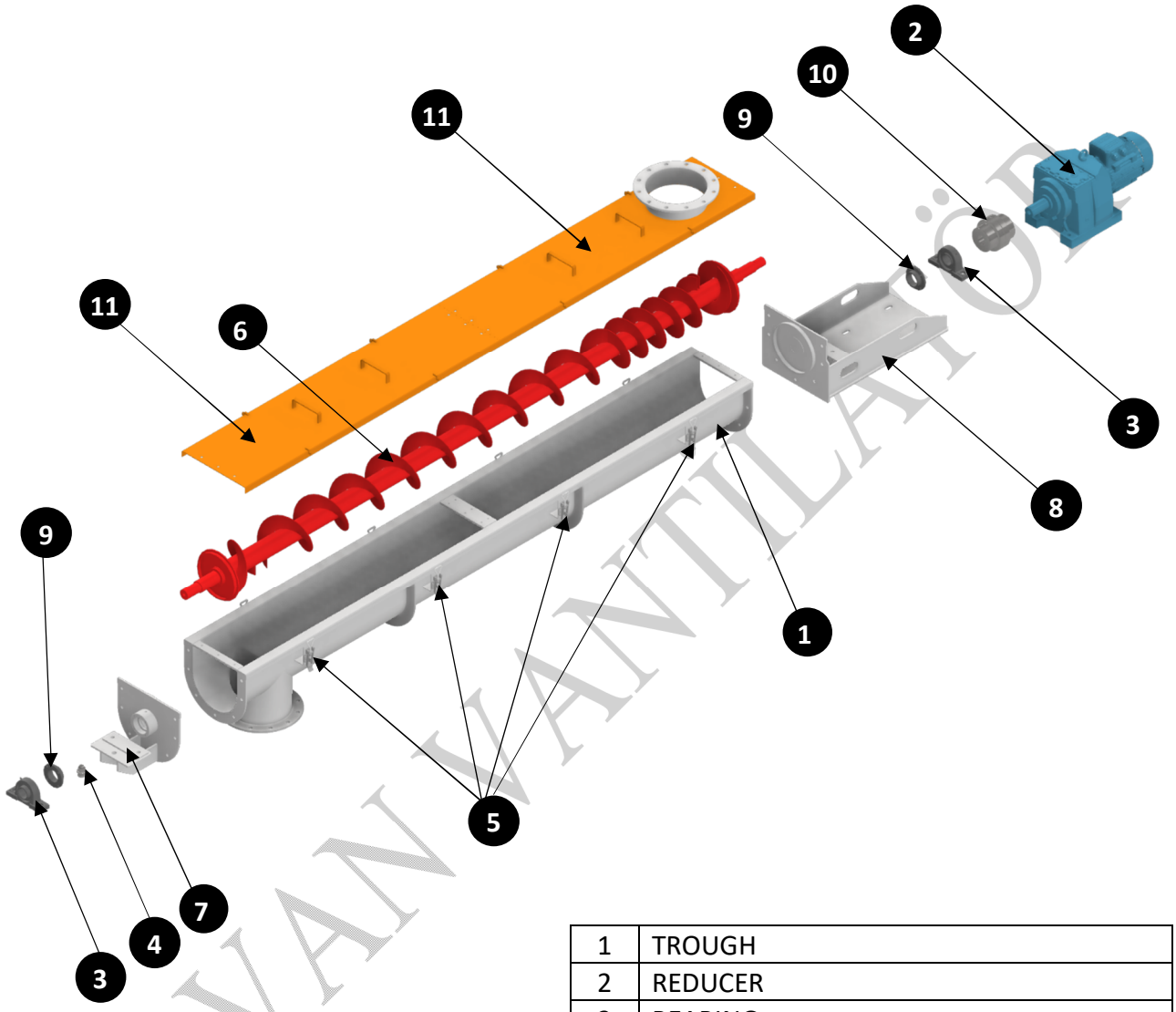
Customer details	
Screw Conveyor type	
Serial No	
Purchase order No	
V	
$n_{Red.}$	
$n_{mot.}$	
$N_{mot.}$	
Year of manufacture	
Drive type	
Bearing location	

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5. PARTS AND ACCESSORIES OF SCREW CONVEYORS

5.1.Parts List



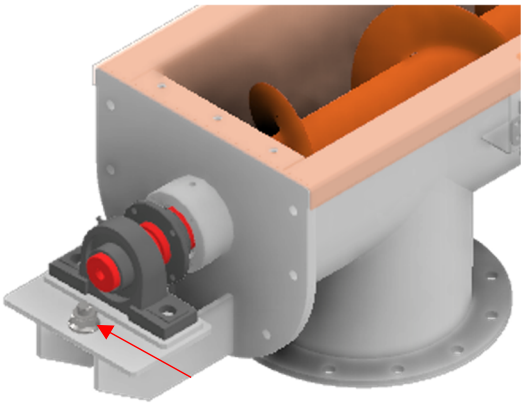
1	TROUGH
2	REDUCER
3	BEARING
4	SPEED SENSOR
5	LATCH
6	SCREW
7	BEARING BASE
8	MOTOR BASE
9	GLAND
10	COUPLING
11	UPPER COVER

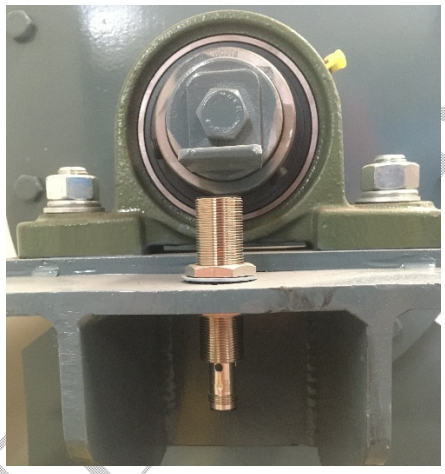
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5.2.Accessories

5.2.1.Speed sensor

Optionally, a speed sensor can be integrated upon demand.





Speed Sensor

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6.COMMISSIONING AND OPERATING



Points to consider before commissioning:

- The electric motor and electric circuits must be definitely connected and operated by a licensed electrician.
- Electrical connections and panels must comply with EN 60204-1: 2018 standard.
- Check if the operating voltage indicated on the label matches with the grid voltage.
- The motor should be protected via a thermal relay calibrated set to the motor current.
- Grounding of the body should be done in accordance with the procedure.
- Before commissioning the screw conveyor, all safety measures should be reviewed.
- While the screw conveyor operates, foreign substances should be prevented from getting into the screw conveyor inlets.
- It should be checked whether the screw is rotating in the right direction (arrow direction on the screw conveyor) by turning the motor switch on and off for a short time. If it does not turn in the right direction, the polar connections of the motor must be changed. Motor current should be checked with an ampere meter after the reducer motor started up.
- The motor current should be checked with an ampere meter after the screw conveyor starts up.

WARNING :

- ***According to IEC Standards, the motor can be operated for a maximum of two minutes at 1.5 times the ampere rating of the motor. Adjust the motor thermal relay according to these ampere and time values. Generally, motor amps can be allowed to be up to 90% of the label value during operation.***

WARNING:

- ***When the* screw conveyor *is operating:***

  -Do not put your hand into the screw.

  -Do not hold the coupling and shaft.

  -Protect the* screw conveyor *from materials such as rope, plastic, cloth, etc. that could get entangled in the screw, shaft, and coupling.



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7. MAINTENANCE AND LUBRICATION

7.1. Maintenance

The most expensive maintenance is less expensive than the cheapest repair. The better the maintenance of the screw conveyor, the more the screw conveyor works smoothly. The staff responsible for the operation and maintenance of the ventilator are obliged to follow the rules specified in these instructions.

WARNING:

During screw conveyor maintenance, turn off the energy from the electrical panel, prevent it from being opened by others, and put a warning sign.

7.1.1 Monthly maintenance

- As the product passing through wears the screw and body, the conveyor will lose its impermeability. Replace worn parts with new ones.
- Make sure that there is no product left in it during prolonged stops. Since there will be hardening, which is called cake formation in products with high humidity, no product spillage occurs from the screw. In such cases, the entrance direction of the material is checked visually and it is observed whether the remaining product is hardened.
- Check the lubrication of bearings, change if necessary.

7.1.2. Annual maintenance

- Generally, annual maintenance can be done twice in a year, depending on the process. Since the abrasions on the screw and body are more in screw conveyors that work continuously for a long time, make sure to have spare parts.
- Check the drive units.
- If the space on the coupling expanded, replace it with a new one.
- Change the oil of the bearings.
- Check the bolts for tightness, tighten them to proper torque using the torque charts if necessary.
- Contact the authorized service for the reducer (considering its brand) and have it maintained.

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7.2. Lubrication and Lubrication Period

7.2.1. Greasing

- When changing the oil, drain away the grease in the bearings. Then wash it off with pure gasoline or benzene. Diesel and kerosene should never be used. Do not dry with oakum or similar fibers and fluffy materials during the cleaning process. Always use clean and lint-free cloths. Apply grease to the inner rings of the bearings. In the meantime, fill one-third of the bearing housing space with grease.

WARNING:

- If the bearings get hot after the grease is added, that means the amount of grease is too much. Drain some grease.
- To compensate for the grease loss, the same brand and type of grease should be added.
  - ✓ SHELL - Alvania Grease 3
  - ✓ MOBİL - Mobilux 2
  - ✓ BP - Energrease LS 2
  - ✓ PETROL OFİSİ - Regal Starfark Premium 2
  - ✓ SKF- LGWA 2

Original grease was applied by ED-VAN in bearings.

NOT: Reducer oil is out of the scope.

7.3. Maksimum Sıkma Torkları

Maksimum Sıkma Torkları	
Cıvata Tipi (mm)	Cıvata Kalitesi
	Sınıf 8.8
M5	7.0
M6	11.8
M8	28.8
M10	57.3
M12	99.8
M16	248
M20	500

Tablo 1 – Sıkma Torklar

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8. OPERATIONAL TROUBLESHOOTING, CAUSES, AND SOLUTIONS

For the faults signed with and for their solutions, you should consult to ED_VAN

FAILURE: 1

REDUCER IS WORKING, SCREW IS NOT TURNING.

CAUSE OF FAILURE:	REPAIR OF FAILURE:
Coupling is broken or chipped.	Change the coupling.

FAILURE: 2

REDUCER AND SCREW ARE NOT TURNING.

CAUSE OF FAILURE:	REPAIR OF FAILURE:
The thermic tripped.	Turn off the thermal switch.
Reducer motor burned.	Change the reducer motor.
Screw conveyor is stuck. There are foreign objects stuck in the screw.	Clean the screw.
Noise from the bearings.	The bearings may be broken, check it out. If necessary, replace the bearing and bearing seal.
The moist material has entered into the screw conveyor and it is stuck between the body and the screw.	Disassemble and clean the screw conveyor.

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FAILURE: 3

PREMATURE THROUGH FAILURE.

CAUSE OF FAILURE:	REPAIR OF FAILURE:
Bent screw.	Straighten or replace the screw.
RPM is too high or through loading is too high.	Reduce speed. Consult ED-VAN for recommended speed and loading.

FAILURE: 4

DRIVE SHAFT BREAKAGE.

CAUSE OF FAILURE:	REPAIR OF FAILURE:
Excessive torque.	Replace the shaft and consult ED-VAN for proper toque rating.

FAILURE: 5

COUPLING SHAFT BREAKAGE.

CAUSE OF FAILURE:	REPAIR OF FAILURE:
Excessive torque.	Replace the shaft and consult ED-VAN for proper toque rating.
Incorrect alignment.	Realign the shaft assembly.
Excessive shaft wear	Replace coupling shaft.

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FAILURE: 6

MOTOR OVERLOAD.

CAUSE OF FAILURE:	REPAIR OF FAILURE:
Motor undersized.	Change the motor.
Overlaoded feeding condition.	Empty the through, control the feed and operate under design conditions.

FAILURE: 7

THROUGH END BEARING FAILURE.

CAUSE OF FAILURE:	REPAIR OF FAILURE:
Bearing contamination.	Replace the seal.
Insufficient lubrication.	Lubricate accordingly to the maintenance requirements.
Improper shaft runout.	Check screw straightness and replace if necessary.

FAILURE: 8

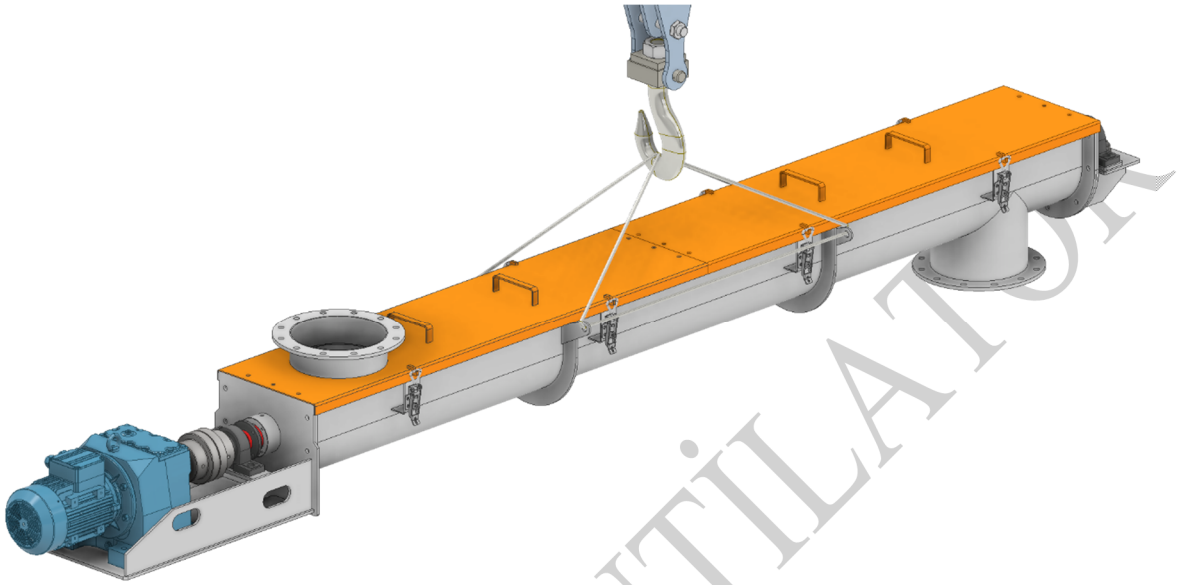
HANGER BEARING FAILURE.

CAUSE OF FAILURE:	REPAIR OF FAILURE:
Incorrect alignment.	Realign the shaft assembly.
Improper speed and through loading.	Consult ED-VAN for recommended speed and loading.
Excessive bearing wear.	Replace hanger bearing.

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9. TRANSPORTATION AND STORAGE

9.1. Transportation



WARNING:

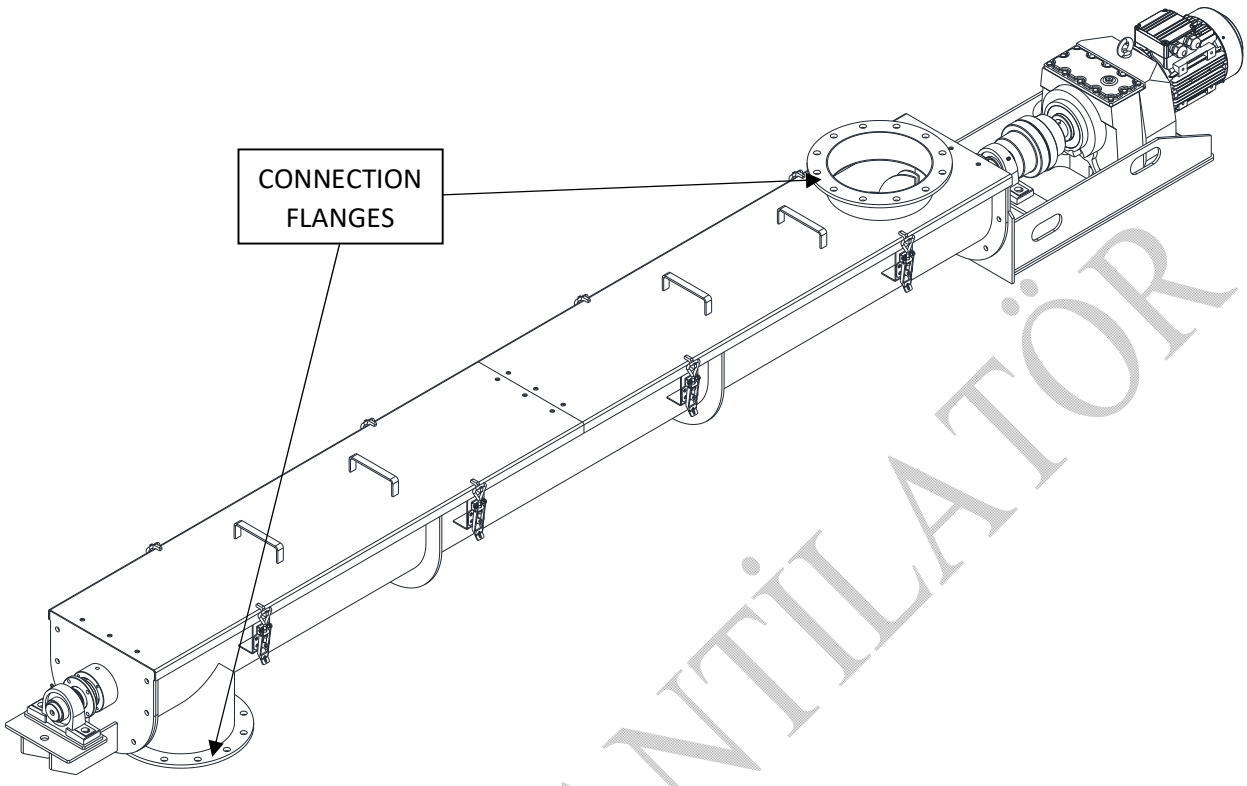
In order to transport the screw conveyor from one place to another, use the handling hoops on the conveyor. Do not lift from the sensitive parts of the screw conveyor. (shaft, screw, coupling, connecting neck, drive motor, etc.)

9.2.Storage

- Screw conveyors should be kept indoors and protected from moisture, chemical reactions, and rain.
- Shafts should be kept away from moisture and excessive heat in order to prevent corrosion.
- Turn the screw by hand every week. Failure to do so may cause the screws to bend and become permanently deformed.
- Reducer should always be kept lubricated.
- Our company cannot be held responsible for damages arising from the storage, and after the vehicle enters the customer's working area.

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9.3. Installing the Screw Conveyor



- The screw conveyor is mounted to the connection flanges with the help of bolts.
- Tighten the bolts by placing one of the sealing elements (cord, rubber gasket, rope etc.) between the flanges.

WARNING:

- If the screw conveyor is to be installed in an open area, it should be protected from rain and external factors.
- Do not operate the screw conveyor without tightening all the connecting bolts!

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