SCREW CONVEYOR

DATA PACK

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Purpose of the Screw Conveyor Operating Manual

This manual is designed to provide essential information for the safe installation, operation, maintenance, and troubleshooting of the screw conveyor. Its purpose is to ensure that users can:

Primary Objectives:

- Understand the screw conveyor's design, components, and functionality.
- Ensure safe and efficient operation.
- Perform routine maintenance and repairs.
- Troubleshoot common issues.
- Optimize conveyor performance.

Intended Audience:

- Plant operators
- Maintenance personnel
- Supervisors
- Engineers
- Technicians

Safety Precautions for Screw Conveyors

Importance of Safety

The safety of personnel and equipment is of utmost importance when working with screw conveyors. Failure to follow safety guidelines can result in serious injury, death, or equipment damage.

Screw Conveyor Safety Guidelines

Responsibility

It is the responsibility of contractors, installers, owners, and users to ensure compliance with:

- Occupational Safety and Health Act
- State and local laws and ordinances

Essential Safety Precautions

1. Operate conveyors only with covers and guards in place.
2. Lock out power before inspection, cleaning, maintenance, or repairs.
3. Use railings or fences for open housings.
4. Cover feed openings with grating or guardrails.
5. Lock out power before maintenance or repairs.
6. Follow instructions and caution labels.
7. Avoid placing body parts near conveyors.
8. Refrain from using conveyors for unauthorized purposes.
9. Avoid poking or prodding material into conveyors.
10. Keep the area clear of debris and obstacles.
11. Eliminate stored energy before opening conveyors.
12. Lock out power before clearing jams.
13. Avoid field modifications.
14. Consult manufacturers for hazardous materials or pressure vessels

General Safety Precautions

- Read and understand this manual before operating or maintaining the screw conveyor.
- Wear personal protective equipment (PPE): hard hat, safety glasses, gloves, and steel-toed shoes.
- Ensure proper training for operators and maintenance personnel.
- Follow lockout/tagout procedures for maintenance and repairs.
- Keep loose clothing and long hair tied back.

Electrical Safety

- Ensure proper electrical connections and grounding.
- Use qualified electrical personnel for installations and repairs.
- Avoid overloading electrical systems.
- Keep electrical components dry and free from dust.

Mechanical Safety

- Guard moving parts (screw flights, bearings, etc.).
- Use proper tools for maintenance and repairs.
- Keep hands and feet away from moving parts.

Material Handling Safety

- Ensure proper material loading and unloading procedures.
- Avoid overloading the conveyor.
- Use dust collection systems or ventilation for hazardous materials.

Specific Safety Hazards

1. Entanglement: Avoid loose clothing or hair getting caught in moving parts.
2. Crushing: Keep hands and feet away from moving parts.
3. Falling objects: Secure materials and equipment.
4. Electrical shock: Ensure proper electrical connections and grounding.
5. Fire: Keep ignition sources away from flammable materials.


Do Not Climb, Sit, Stand or Walk, On Conveyor At Any Time
Do Not Perform Maintenance on Conveyor Until Electrical, Air, Hudraulic and Gravity Energy Sources Have Been Locked Out and Blocked
Operate Equipment Only With All Approved Covers and Guards in Place
LOCK OUT ALL Power and Block Gravity Loads Before Servicing
Ensure That All Personnel Are Clear of Equipment Before Starting
Allow Only Authorized And Trained Personnel To Operate or Maintain Conveyors and Accessories
Keep Clothing, Body Parts, and Hair Away from Conveyors
Clean Up Spillage Near Moving Parts ONLY When the Power Is Locked Out AND Guards Are In Place
DO NOT Modify Conveyor Controls
Ensure That All Controls are Visible and Accessible
Operate Equipment Only With All Approved Covers, Guards, and Safety Labels In Place
Report All Unsafe Conditions
POST IN PROMINENT AREA

Comprehensive Installation Checklist for Screw Conveyors

Receiving

1. Verify shipment against shipping papers.
2. Inspect items (troughs, screws, covers, drive units) for damage.
3. Do not install damaged components.

Lifting and Moving

1. Use spreader bars with slings for lifting.
2. Maximum unsupported span: 12 feet.
3. Never lift with only one support point.
4. Consider heavy items (drives, gates) when choosing support points.

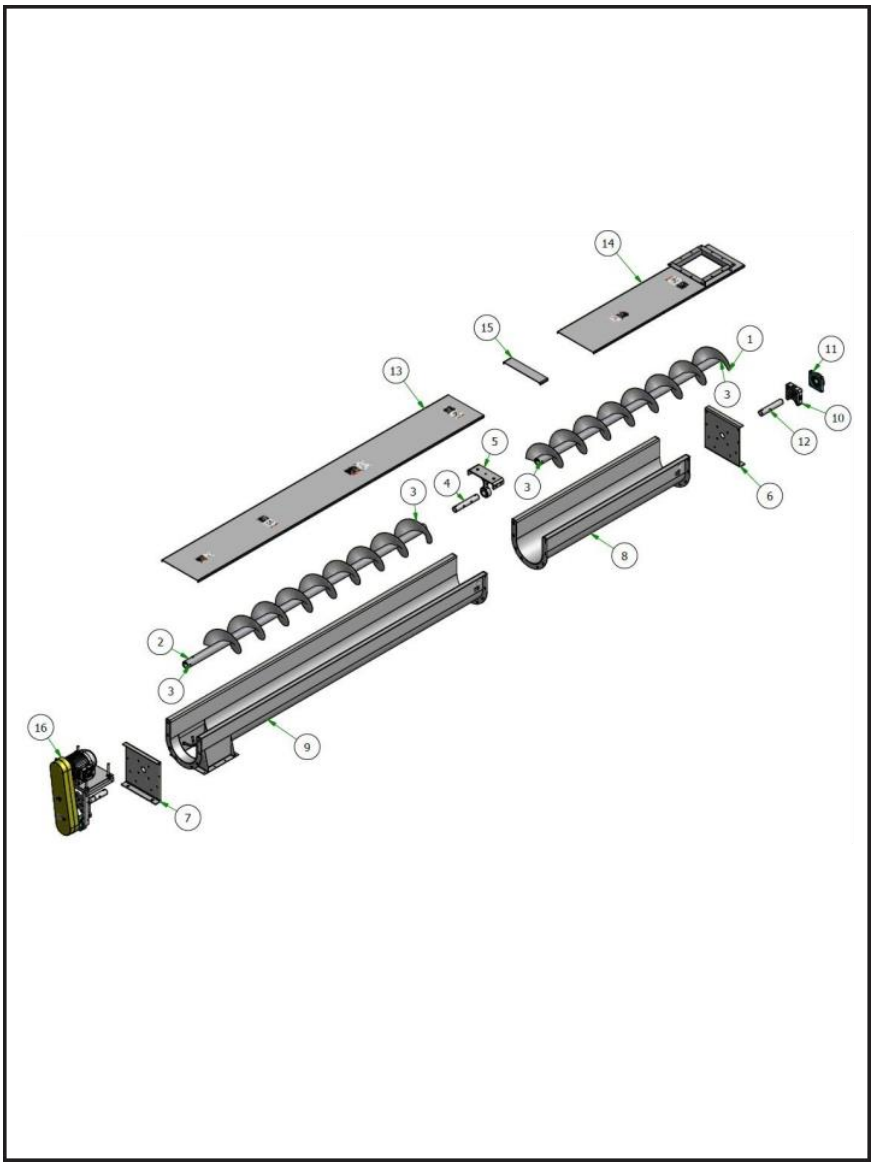
Mechanical Installation (1-17)

1. Machine aligned, levelled, and plumbed for correct alignment.
2. Assembly and mounted bolts checked for tightness.
3. Connections to other process machinery checked for fit.
4. Machine checked internally for foreign bodies.
5. All gaskets and seals fitted.
6. Motor & gearbox references checked against drawings.
7. Gearbox filled with oil to the correct level.
8. Drive chain (if fitted) aligned and tensioned correctly.
9. Drive chain lubricated.
10. End bearings greased.
11. Hanger bearing (if fitted) aligned, mounted, and greased.
12. Inlet & outlets safe (chutes in place).
13. Rotation sensor installed (if applicable).
14. Erection damage made good.
15. Guards/inspection doors in place, secure, with safety signs.
16. Bolting up completed to correct torque settings.
17. Safe access to and from machine.

Drive and Thrust Unit

1. Mount drive/thrust unit at discharge end.
2. Center unit in seal and trough end openings.

18.



Bill of Materials	
Item	Descripton
1	Screw
2	Screw with Bare Pipe at Discharge
3	Coupling Bolts (Not Shown)
4	Coupling Shaft
5	Hanger with Bearing
6	Tail End Trough End
7	Trough End for Screw Conveyor Drive
8	Trough End for Screw Conveyor Drive
9	Trough with Discharge Spout
10	Seal
11	Bearing
12	Tail Shaft
13	Flanged Cover

Training and Documentation

- Provide regular training for operators and maintenance personnel.
- Maintain records of training and safety inspections.
- Review and update safety procedures regularly.

Start-up Procedure:

1. Ensure the conveyor is properly installed and aligned.
2. Check the electrical connections.
3. Check the lubrication levels.
4. Start the drive unit.
5. Gradually increase the speed.
6. Monitor the conveyor for proper operation.

Normal Operation:

1. Monitor material flow and adjust speed as needed.
2. Check temperature and vibration levels.
3. Perform regular inspections.

Shutdown Procedure:

1. Gradually decrease the speed.
2. Stop the drive unit.
3. Lock out electrical power.
4. Perform cleaning and inspection.

Emergency Stop Procedure:

1. Press the emergency stop button.
2. Disconnect power.
3. Investigate and address the issue.

Regular Maintenance Schedule:

1. Daily: Check lubrication, clean conveyor.
2. Weekly: Inspect bearings, check alignment.
3. Monthly: Check wear parts, perform thorough cleaning

Critical Safety Reminders

- Ensure adequate safety measures meeting national & site standards.
- Never hammer, bang, or force any part of the conveyor during installation, operation, or maintenance.
- Damage can cause malfunctions, blockages, or void warranties.

Pre-Operational Checks

- Verify all items on this checklist.
- Conduct visual inspections.
- Perform functional tests.

Documentation Requirements

- Record installation details.
- Maintain maintenance and repair records.
- Update documentation as necessary.

Comprehensive Commissioning Checklist for Screw Conveyors

Pre-Power Checks (With Power Off)

1. Cable installation completed and tested (national & site standards).
2. Cables tested for insulation and continuity (National Standards).
3. Emergency stop checked and tested (back to MCC).
4. Fuses and overload ratings checked (against motor settings).
5. Rotation sensor operational (cuts power to motor on no rotation).

Power-On Checks (No Load)

1. Direction of drive motor checked.
2. Machine first run.
3. Visual inspections for:

- 3.1 Bearings & Seals Overheating.
- 3.2 Unusual noises.
- 3.3 Drive Alignment.
- 3.4 Geared Motor Unit Overheating.

Corrective Actions (If Issues Detected)

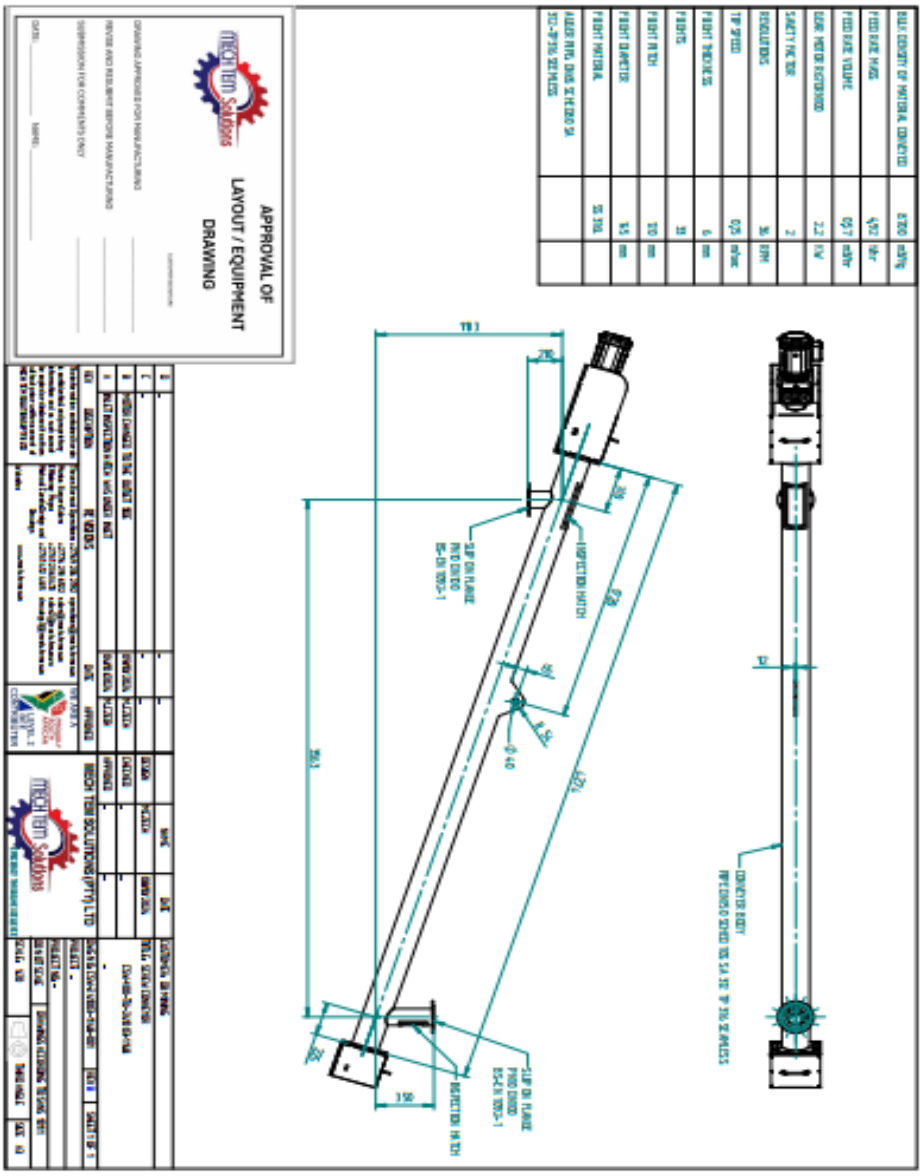
4. If issues observed:
- 4.1 Check bearings' grease level (end bearings).
- 4.2 Verify conveyor alignment (machine, supports, interface joints).
- 4.3 Check drive assembly and mounting bolts (tighten if necessary).
- 4.4 Inspect geared motor unit alignment and hanger bearing (if fitted).

Contact Information for Support

If you need further information or clarification on Mech-Tem's products or services, you can reach out to them using the provided contact details

- Phone Number: 010 085 9963
- Website: WWW.mech-tem.co.za
- sales@mech-tem.co.za

GENERAL DRAWING ARRANGEMENT



MATERIAL CERTIFICATES