



INTECNEA S.L.

GRINDING PLANT

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3.4

BELT CONVEYOR

OPERATION MANUAL



TOSB 1. Cad. No:24/2 Çayırova-Kocaeli, TÜRKİYE 41420
+90 (262) 658 1340 +90 (262) 658 0527
www.ersel.com



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ERSEL Code	10 45 065 0025
Pos No	5
Process No	70-BC-02
Brand	Ersel
Quantity	1 Pc
PROCESS INFORMATION	
Material	Quartzite+Anhydrite
Feeding Grain Size	-5 mm
Product Size	d ₈₅ -90 mic.
Feeding Material Bulk Density	2,98 t/m ³
MACHINE INFORMATION	
Transfer capacity	25 t/h
Belt Width	650 mm
Belt Speed	0,8 m/s
Conveyor Angle	13°
Diameter	ø420 mm
Belt Material	ÖZER-EP125-600-4-6/2 A-N
Distance between drum axis	22.500 mm
Total length	24.000 mm
DRIVE UNIT	
Gearbox brand and Code	Siemens-KAD109-LE132ZST4PX
Motor Power	5,5 kW
Gearbox output speed	32 rpm
Motor Code	LE132ZST4PX
Rated Voltage	400 V
Frequency	50 Hz
Insulation Class	F
Oil that is used in gearbox	3,7 Liter
Oil quantity that is used on gearbox	Mineral CLP VG 220
With hollow shaft and mechanical torque arm	
CONTROL EQUIPMENTS	
Speed Control	Yes
Rope Pull Switch	2 Pcs Telemecanique (Schneider) XY2-CH13250
Belt Shift Switch	2 Pcs Telemecanique (Schneider) XCRT215
Turning Control	Sick-IME18-08BPSZC0S + DOS-1204-G
MACHINE WEIGHT	~ 7.300 kg/pc
STATIC LOAD	~ 10.000 kg/pc

1. INTRODUCTION

The purpose of this manual is to provide commissioning, operation and maintenance rules for the user.

This document has been prepared in order to guide the user and it does not include all information. Safe and long term operation of the device can only be achieved with service works that are provided by authorized and qualified persons.

Machine has been designed and manufactured in accordance with 2006/42/EC, 2006/95/EC regulations and TS EN ISO 12100:2010, TS EN 953+A1 VE TS EN 60204-1 standards in a manner that not become harmful to humans, objects and itself. However, some harmful cases might be encountered. In order to take measures against such unpredictable effects, all rules specified in this manual should be understood and applied.



DO NOT OPERATE WITHOUT READING OPERATION AND
MAINTENANCE MANUAL

2. INTENDED USE

Band conveyor consists of an endless belt that is strained between two drums. The material to be conveyed is transferred with a belt driven by a number of drums. It is a device mainly used for transferring of materials such as ores, stone, sand and gravel.

3. WARNINGS AND SAFETY PRECAUTIONS



Installation, commissioning and maintenance of the machine should be done by authorized and **experienced persons**.



Cable installation and their connections to the device should be done in accordance with **electrical norms**, directions of the mechanical components should be paid attention.



It is inconvenient that unauthorized persons come close to the machine while it is running. Required arrangements should be done after making sure about that the machine stopped completely when the belt is needed to be replaced or machine needed maintenance.



Make sure that the personnel who operate the machine check if there is someone in dangerous areas around the machine before starting.



In order to get an easy start-up of the machine, material should not be loaded in the machine in the beginning.



Before stopping the machine, cease the material feed and wait until there is no material in it, then stop the machine.

3.1. Safety Signs on the Machine and Their Meanings

	CAUTION
	CAUTION HAND/ARM CAN SQUEEZE
	CRANE LIFTING POINT
	DO NOT OPERATE WITHOUT READING OPERATION AND MAINTENANCE MANUAL



CAUTION ELECTRICITY



PROHIBITED AREA FOR UNAUTHORIZED PERSONNEL



USE EARMUFFS

3.2 Electrical Equipments



Only authorized personnel are allowed to repair the electrical component on the belt conveyor.



Only the expert staff of the customer itself can work on electrical equipment.



Check whether the conveyor is grounded or not, make sure that the grounding work is done.

Do not make any welding work on the belt conveyor without required precautions. Otherwise electrical equipment might get damaged.

4. TECHNICAL INFORMATION

Belt conveyor consists of driving drum, tail drum, endless belt rubber, carrier return rollers and scrapers. Motor powers vary by the width, length, angle and capacity of the conveyor. Since the conveyor operating angle is limited, special profile belt rubbers are required when certain angles are exceeded.

Equipments that constitute the belt conveyor are explained below.

4.1. Bent Sheet Frame (1)

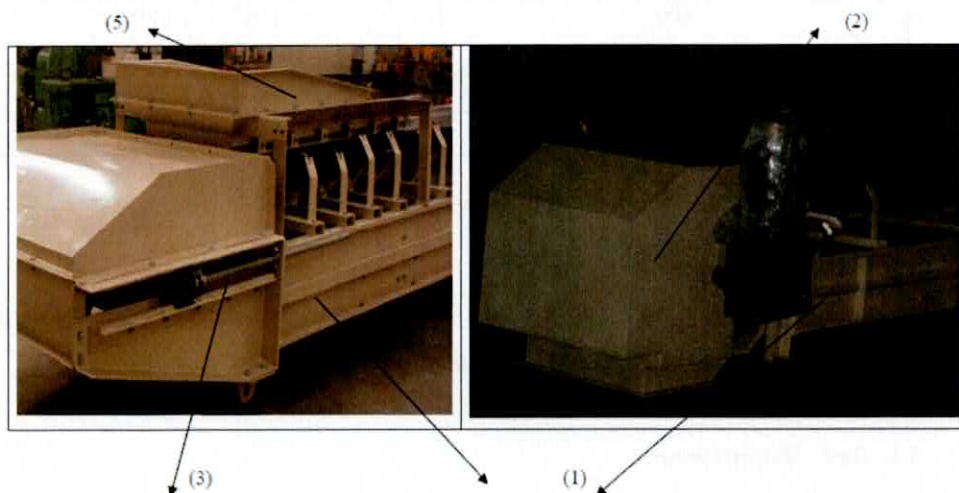
Frame of the belt conveyor is manufactured using high quality sheet metal. Frame contains support systems and it is easy-to-assembly.

4.2. Driving System (2)

Driving system of the belt conveyor is directly connected to the shaft of driving drum and fixed with the tensioning part. In belt conveyors, speed of the belt conveyor is determined depending on the capacity of material to be transferred.

4.3. Tensioning System (3)



Tensioning system is located in the tail section of the belt conveyor. Following the assembly, the tension of the belt is set with the screw tensioning system.



4.4. Roll Group (4)

Carrier rolls, impact rolls, return rolls and guide rolls are used in belt conveyors.



Carrier Roll	Impact Roll
	
Return Roll	Guide Roll

4.5. Loading Tub (5)

Belt conveyors are used in locations where the material poured. Various types of loading tubs are used according to the size of belt. High quality rubber is used on side walls and backsides where they are intersected with the belt.

Belt Conveyor	Model Name
500	TMD-BC/500
650	TMD-BC/650
800	TMD-BC/800
1000	TMD-BC/1000
1200	TMD-BC/1200
1400	TMD-BC/1400

Belt Conveyor Rolls

5. START-UP

Belt conveyor should only be used by trained staff. Machine should not be operated in case that any problem in the machine that threatens operational safety.

5.1. Basic Requirements

Check the following points before starting the machine:

- ✓ Assembly has been done according to operation instructions.
- ✓ There is no any article left in the system (tools, auxiliary materials etc.)
- ✓ Bearings have been mounted, aligned correctly and filled with lubricator in accordance with the lubricator list.



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Driving unit (motor, gearbox, sleeve, chain drive, belt drive etc.) has been located, aligned correctly and filled with lubricator in accordance with the lubricator list.



Operating voltage should meet the nominal voltage specified in motor plate.



Rotation direction of independent drive components should correspond to the transfer direction. Safety devices have been mounted and they work perfectly.



Operate the machine when all its safeguard and safety equipments are in place and works perfectly.

How to open power supply?

When checking the control system, conveyors should be started in following sequence: discharging system – conveyors – feeding system. They should be stopped in the opposite sequence. Drive units should be connected as specified in the operation instructions of manufacturer.

Before feeding the material, conveyor should be operated idle and the locations where should be lubricated before operation must be lubricated. In order to prevent damage in motor and reductor, electrical connections should be controlled and it should be paid attention to the operation of the belt in correct direction. For the conveyors with an axle offset higher than 15 meters, in order to prevent back away, a break system has been added. Belt conveyor should not be stopped when loaded except emergencies.

6. MAINTENANCE INSTRUCTIONS

6.1. Motor Maintenance Instructions

Only original spare parts specified in the valid spare parts list should be used.



Before starting to procedure turn off the energy of the motor and secure it in order to prevent unintentional turn on.



Motor maintenance should be done according to manufacturer's instructions.

6.2. Procurement and Replacement of Spare Parts

In case that any breakdown and wear in machine parts, they should certainly be replaced with original ones. Otherwise our company cannot be held responsible.



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6.3. Machine Maintenance

At the end of each day belt cleaning is done. Dirts adhered to drum and roll surfaces are cleaned. Oil level of the drive drum is controlled and oil is added if necessary.

At the end of every 750 hours (100 work days): Drive drum and tension bearings are dismantled and washed with gasoline. It is remounted after being lubricated. Discharge plug of the drive gearbox is opened and old oil is discharged, gears are washed with gasoline or an adequate solvent and missing oil is completed. Direction of the belt rubber is changed, frontal side is fixed by turning it back and the movement direction of the belt rubber is altered. Broken rolls are replaced.

7. MACHINE SETTINGS

If the tension of belt is not enough when it is loaded, friction force reduces and belt rubber slips on drum and cannot transfer material. Required settings to prevent that, are given below.

7.1 Strainer Setting

Belt with enough amount of tension is essential for prolonged lifetime of the belt rubber. For that reason, at the end of minimum 50 hours, strainer setting should be done. Strainer setting is done by moving back the tail drum that are fixed with two strainer bolts sledged bearings. The tensioning mechanism in bent sheet metal profile or lattice beam long sized conveyors are weighted tensioning and the bearings in tail drum are used only for sliding setting of the belt.

7.2 Sliding Setting

All carrier and return rolls on the belt should be placed in perpendicular with the line connecting the head and tail drums through the belt centerline. Otherwise there shall be slidings on the belt. One reason of that sliding is non-parallelism between head and tail drums. If the belt height slides in one direction, it shall be adjusted using first carrier then return rolls. In order to adjust rolls, the side which slides when looked from the turning direction and the other side should be taken back. Connection plugs of roll cushions are formed ovally. By loosening connection bolts and pushing the cushion lightly with a hammer, needed end can be taken forward or backward. When this process is finished, connection bolts should be fixed.

8. ASSEMBLY-DISASSEMBLY (Mounting - Demounting)

- a) Belt rubber is laid down on a surface and the upper layer is laid on one side.
- b) In another place, all frames except frontal frame is mounted. This frame group is sat on the lower part of laid rubber. And upper part is laid on that frame group.



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c) Frontal frame is mounted by stretching the belt rubber from the back tensioning mechanism to that frame group, required tension is obtained with tensioning mechanism.

d) Belt conveyor is lifted with the crane after motor and belts fixed. Front and back stems are mounted and fixed with conveyor.

e) For disassembly (demounting) the procedures above should be applied back to front.

9. PROTECTIVE PRECAUTIONS

a) Check carrier and return rolls, replace faulty ones.

b) If the belt rubber is produced specifically for hot material, never convey any hot material.

c) Fix any tear on the belt rubber and prevent possible new tears.

d) Pay attention on that the rubber scrapers located on sides of feeding groove are set properly and the belt rubber is not stuck between scraper and belt rubber.

e) Cover the belt according to various climate conditions as good as possible. External factors such as snow, rain lead to premature wear of belt rubber.

f) Make sure the tension of belt rubber being in normal level. Loosen or highly tensioned belt rubber affects the lifetime of belt rubber.

g) Protect belt rubber against the oil, if there is any contamination, clean with gasoline or similar cleaning agent.

h) Pay special attention on not leaving any material especially on return rolls and between belt and roll. Even small material particles might lead to belt tears.

10. DIAGNOSTICS

FAULT	REASON	REMEDY
Belt slackness	- Inadequate belt tension.	-Tense the belt with the strainer system in the tail section.
Sliding of the belt to one side through the line	- Drum centerline, alignment, parallelity are not	-Make it right -Fix the joint.
Double side movement of the belt	- Irregular loading - Irregular drums	- Make sure that the loading is done adequately - Check the distance between drums and get them in equal distances.
Over deformation on surface	- Friction of the product on the belt - Irregular feeding of the material onto belt	-Change the belt and remove the reasons behind

Datasheet for SIMOGEAR Geared Motors



19.42

MLFB-Ordering data : 2KJ3537-5EK23-4CL1-Z
D11+K01+K06+L02+L75+M10+M23+M59

Client order no. : Item no. : M11
Order no. : Consignment no. :
Offer no. : Project :

Motor data																			
U	D/Y	f _N	P _N	P _N	I _N	n _N	T _N	IE-CL	Operating mode	n ₂	T ₂	f _B	η _{4/4 load}	η _{3/4 load}	cos φ	I _A /I _N	T _A /T _N	T _B /T _N	T _{av} /T _N
[V]		[Hz]	[kW]	[hp]	[A]	[rpm]	[Nm]			[rpm]	[Nm]		[%]	[%]					
230	D	50	1.100	1.47	4.17	1,440	7.29	IE3	S1	1.141	8,549.13	1.52	84.1	84.7	0.78	6.90	2.90	3.60	3.20
400	Y	50	1.100	1.47	2.40	1,440	7.29	IE3	S1	1.141	8,549.13	1.52	84.1	84.7	0.78	6.90	2.90	3.60	3.20
460	Y	60	1.100	1.47	2.15	1,750	6.00	IE3	S1	1.387	7,033.93	1.85	86.5	86.4	0.75	8.20	3.40	4.40	3.70

Motor type 1LE motor with Premium Efficiency LE90SM4PF
Number of poles 4-pole
Degree of protection (K01) IP55
Thermal class 155 (F)
Moment of inertia J_{mot} 0.00360 kgm²

Terminal box position (M59) 2A
Electrical connection at terminal box Cable gland metric
Ventilation (M23) External fan

Geared motor

Type designation SIMOGEAR KAD169-Z49-LE90SM4PF
Gearbox Bevel gearbox KAD169-Z49
Mounting type gearbox Shaft-mounted design (torque arm)
Output shaft H100 mm (Hollow shaft)
Mounting position (D11) M1 output side A
Transmission ratio 1,261.00 (871825043 / 691200)
Nominal torque 13,000.00 Nm
Gear oil (K06) Mineral oil CLP VG220
Oil charge 17.2 l
Specification CE (Europe / other countries)
Environment temperature -15 ... +40 °C
Weight without oil 445.9 kg
Housing material first gearbox Cast iron
Housing material second gearbox Cast iron

General options

Surface treatments Painted
Coating (L02) Coating for normal environmental stress C1
RAL Color (L75) 7016 anthracite gray
Coating on flange -
Packing Standard packing

Further information

General product information [SIMOGEAR](#)
Configurator [2KJ.....](#)
Operating instructions
Gearbox [BA 2030](#)
Motor [BA 2330](#)
Catalog [MD 50.1 Geared motors](#)

Gearbox options

Hollow shaft cover Sealing cap
Output shaft bearing Standard bearing
Output shaft sealing Standard sealing
Gearbox breather Pressure breather valve
Oil level control Oil level screw
Oil drain Oil drain plug

Motor options

Motor protection (M10) Temperature sensor PTC thermistor, disconnection

Legend

U = Voltage	I _N = Rated current	n ₂ = Geared motor output speed	cos φ = Power factor
D / Y = Circuit	n _N = Rated motor speed	T ₂ = Geared motor output torque	I _A /I _N = Relative starting current
f = Frequency	T _N = Rated motor torque	f _B = Service factor	T _A /T _N = Relative starting torque
P _N = Rated motor power	IE-CL = Efficiency class	η = Efficiency	T _B /T _N = Relative breakdown torque
		*) On request	T _{av} /T _N = Relative average acceleration torque

