Operating manual

for

BERTRAM® Conveyor
Type BGM

Original Operation Manual, **Status: 06/2023**

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1. Assembly instructions for partly completed machinery

Declaration of Incorporation according to the EC Machinery Directive 2006/42/EG, Affix II B

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hereby declares that the partly completed:

Type BGM

the basic safety and health requirements
of the **EC machinery directive 2006/42/EC affix I** corresponds.

The partly completed machine equates further the:

Relevant EC Directives:
- Machinery directive 2006/42/EC
- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU

Applied harmonized standards:
- ISO 12100:2010

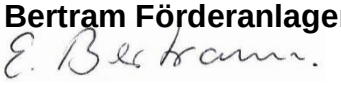
The technical documentation for this partly completed machinery was to affix VII part B created. The manufacturer agrees that the technical documents on request of national authorities will be transferred on electronically way.

Authorized person for the preparation of the technical documentation:

Bertram Förderanlagen und Arbeitsbühnen GmbH, Junkersstraße 2, D-30179 Hanover

The commissioning of the partly completed machine is prohibited until the partly completed machine will be couplet with an other machine and thus provisions of the EC Directive machine corresponds and the EC Declaration of Conformity according to affix II A exists.

Bertram Förderanlagen und Arbeitsbühnen GmbH



Dipl.-Kff. Erdmute Bertram
(Managing Director)

2. Safety instructions

2.1 Symbol- and Reference explanation

Symbols: Installation and commissioning just by qualified specialists according to user guide.

Please note the importance of the following symbol- and reference explanations which are devided in danger levels and classified to ISO 3864-2.

DANGER	
	Indicates a directly threatening danger. If You don't follow the information, death or serious personal injury (disability) could result.

WARNING	
	Indicates a potential dangerous situation. If You don't follow the information, death or serious personal injury (disability) could result.

CAUTION	
	Indicates a possibly dangerous situation. If You don't follow the information, property damages or light to medium personal injury could result.

REFERENCE	
	Indicates general instructions, useful operator tips and working recommendations which has not influence to the safety and healthiness of the staff.

2.2 Basic safety

This manual serves as a basis for the individual belt conveyor parts in final form-term use as a belt conveyor safety requirements and to operate. This operating manual, especially the safety, of all people to be observed, is the work on or with the belt conveyor. In addition, the note to the job site for the applicable rules and regulations for accident prevention.

The operating instructions must always be available to keep the belt conveyor.

2.3 Intended use

The final belt conveyor is designed for conveying of bulk solids.

For trouble-free conveying the belt conveyor must meet the following conditions:

- You must select a special belt for your bulk
- You need to make a daily visual inspection of the belt conveyor, so that any errors are detected and eliminated
- You must create internal regulations for regular checks to ensure that the construction and electrical products is maintained in working order.
- it may be carried no life
- there must be no living being there during the operation on the belt conveyor

2.4 Reasonably predictable misuse

The final belt conveyor is exclusively for conveying bulk materials only. Any other or additional use shall not be deemed as intended and will void the warranty claim.

3. Description of device

3.1 General things

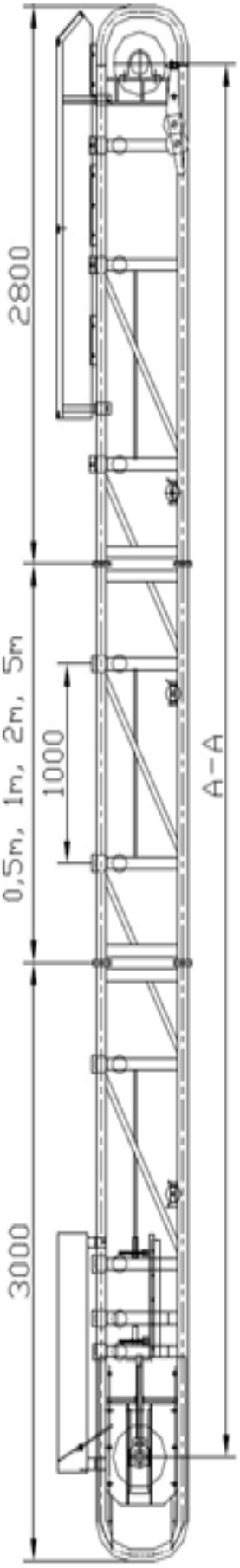
The final belt conveyor is suitable for the carriage of bulk goods. The engines are installed on the appropriate length for the specified maximum load.

3.2 Description of the funktions

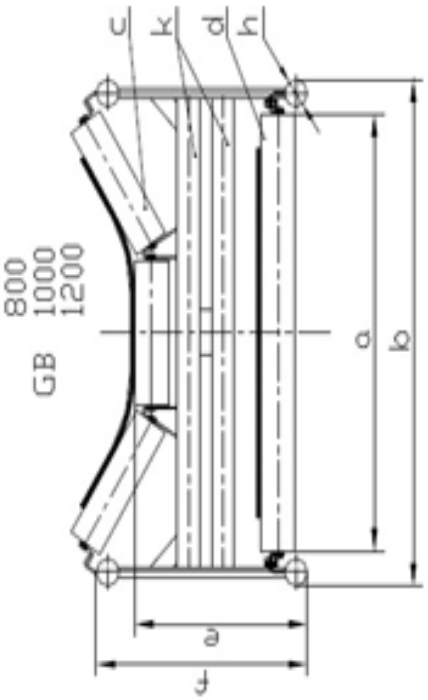
The final belt conveyor is used mainly there, where it comes to promote fixed bulk goods over a certain length. The conveyor length matches the length of the axial distance.

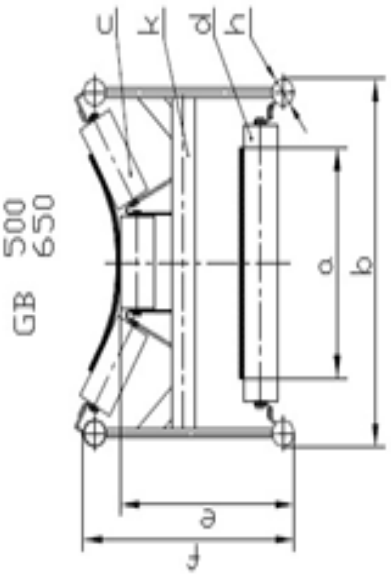
3.3 Technical data

Massive conveyors type BGM



	a	b	c	d	e	f	hØ	k
GB 500	500	800	ø89×200	ø89×600	450	550	60	1
GB 650	650	950	ø89×250	ø89×750	450	550	60	1
GB 800	800	1100	ø89×315	ø89×950	450	550	60	2
GB 1000	1000	1300	ø89×380	ø89×1150	550	650	60	2
GB 1200	1200	1570	ø89×465	ø89×1400	580	720	70	2





4. Installation instructions

4.1 Transport

WARNING	
	Improper use of transport means (trucks, overhead crane, tools, slings, etc.) can cause bruising and other injuries. Optimum performance of: - Transport and assembly instructions and note compliance - Transport used properly

4.2 Installing the device

General:

For operation, the conveyor must be mounted on one of the mass dimensioned substructure. The attachment must be in accordance to an on-site statics or the conveyor must rest on one level.

Conveyor assemblies:

The conveyor assemblies are placed one behind the other and firmly bolted to the flange connections using the screws and nuts provided.
To mount an endless belt, take out the return rollers and relax the tensioning device completely to the middle. Then the belt can be pulled up;
For this purpose, it is advisable to unroll the belt on the ground, to put it to the side, then the assemblies can be placed one behind the other on the bottom of the conveyor belt.
Firstly, pull the belt over the transmission part (here is the longer frame part because of the tensioning device), then piece by piece on the Intermediate pieces (if present) and finally over the drive part (motor side).
After the belt is pulled up, the return rollers can be reinstalled.
The conveyor belt is tensioned by equally rotating of both clamping spindles.
The outer scraper is removed when the belt is fitted or removed.

As a rule: On the side to which the belt runs during operation, the tensioning or tail pulley must continue to be tense.

For longer conveyors, the belt run can also be adjusted by adjusting the upper and lower rollers (all rollers are angled with plate with long slots, which allow a displacement in the longitudinal direction).

As a rule: The side of the roller to which the belt runs, must be moved to the direction of travel.

All conveyor assemblies are supplied by us exclusively without electricity, that means our delivery stops at the motor terminal board. It is imperative necessary that on site a motor protection switch is installed (exact technical data, amps, etc.; please refer to the motor nameplate).

Hopper assembly:
The fixing screws of the supports of the hopper are unscrewed so far,
that they are only slightly in the thread. Generally, the feeding funnel is put on the task side of the tensioning or deflection part on the upper longitudinal tubes. The
end plate of the funnel should be completely rest with rubber on the conveyor belt, so be positioned behind the tail pulley to prevent that conveying material falls in front of the tail pulley. Then the fixing screws tightened to prevent slipping of the hopper.

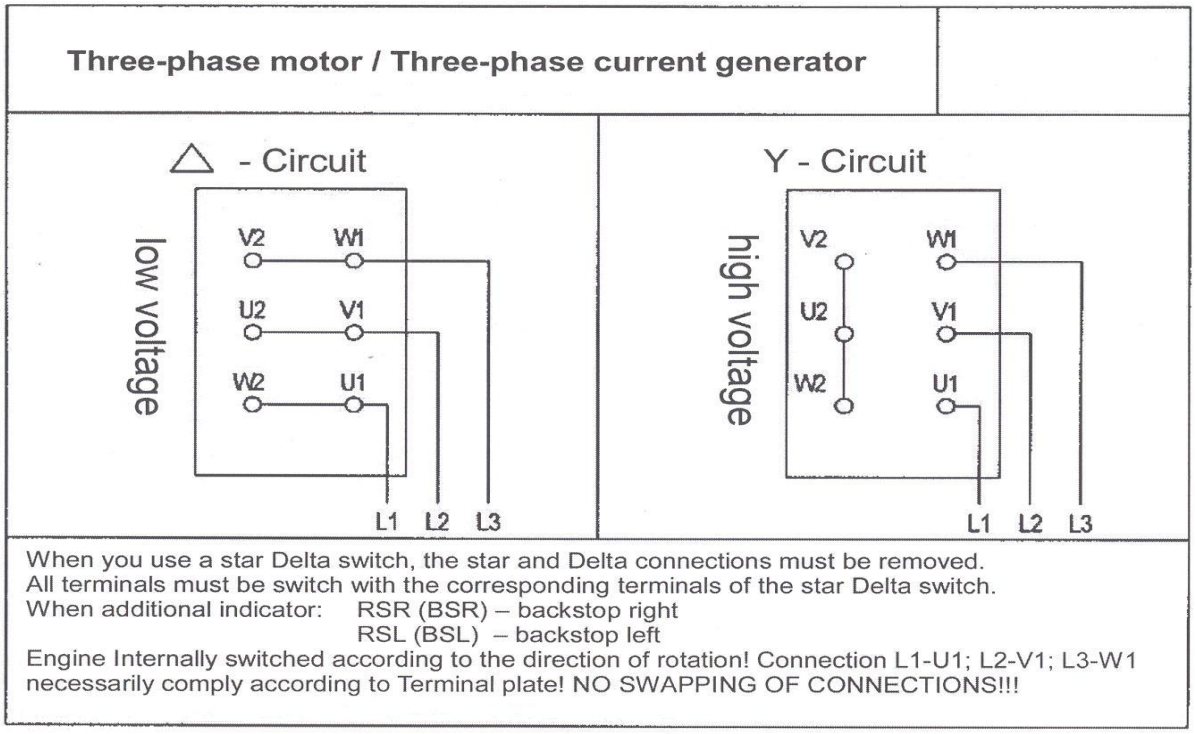
Further installation instructions for accessories are available on request.

4.3 Power supply

WARNING	
	1 Work on the electrical supply may only be performed by trained, accredited experts! 2 The power supply must be carried out on site by a GFCI (ground fault circuit interrupter)! 3 The conveyor should be operated only on the nameplate of the gearmotor with the specified power supply!

When operating with 400 V / 500 V AC the belt conveyor is directly in the control cabinet and is connected through a contactor on and off. The belt conveyor must be secured with a motor-protection switch to prevent overload.

4.4 Wiring diagram



REFERENCE	
	1 Changes the direction of rotation of the motor (reversing), attention must be paid to the correct directional stability of the belt! 2 Changes the direction of rotation on the motor (reversing) to make sure that the hopper can populate themselves by opposing runners operating. The hopper is not suitable for permanent operation of reversing! 3 When changes the direction of rotation on the motor (reversing) to make sure that a possibly installed backstop will be removed or changed to. There may be otherwise a blockage or damage to the gear motor.

5. Manual

5.1 Normal operation

The conveyor belt must be electrified and connected if required by the operator.
After the controller is turned on, in normal operation, no further adjustments are required.

6. Maintenance instruction

WARNING	
	The electrical equipment of the conveyor belt should be checked regularly. Loose connections, scorched or damaged cable must be removed immediately!

REFERENCE	
	Visible bolts or screw nuts regularly for tightness. The intervals are set by the plant itself.

6.1 Troubleshooting and repair

WARNING	
	- Work on the electrical supply may only be performed by trained, accredited experts! - Prefer removing the engine casing plug!

Defective interfering components must be replaced.

REFERENCE	
	Only original spare and wear parts are used! The use of heterologous components is associated with loss of the guarantee for the delivered components.

Belt conveyor does not run after power

Fault finding:	**Fault repair:**
Interrupted supply cable to the drive unit	Supply cable to replace
Belt slipping on the drive pulley	Rubber belt-tension control
Drive unit (bevel geared motor) is defective	Check the Drive unit and replace it if necessary

Belt conveyor has strong noise

Fault finding:	**Fault repair:**
Belt touches the side guide	* Align belt * possibly centering device control

6.2 Cleaning

Component:	*Cleaning medium:*	*Cleaning way:*
framework	water	Jet system or brush
gearmotor	water	wipe with brush or mop
idler	water	wipe with moist mop
belt	water	Jet system or brush

CAUTION

If other cleaning products or cleaning methods are used as listed above, there is a danger that permanent damage to components and thus that the function of the conveyor belt is no longer guaranteed.

WARNING

To carry out cleaning work the following conditions must be met:
- Wear protective glasses
- Please ventilate when cleaning with volatile substances

6.3 Switch drive motor

1 Disconnect the power supply
2 Disconnect the power cables to the motor terminal box
3 Attach a hook on the gearbox and lift it gently with a crane
4 Remove the retaining screw at the stub spindle into the hollow shaft.
5 Carefully pull the motor from the shaft and look for the crane
6 Make sure that the engine is cautious to a protected ground
7 Insert a new geared motor accordingly vice versa

6.4 Change belt

1 Remove any safety components
2 Remove bottom idlers
3 Relax the belt o the diversion part by rotating the clamping screws
4 Unscrew the outer belt scraper from the attachment.
5 Pull the conveyor belt at the drive part on the side
6 Install the new belt and the safety components in reverse order and note the direction of the belt (mostly arrow-marked)
7 Align belt

6.5 Align belt

In regular operation, the voltage and duration is central to check the conveyor belt. If the tension on the belt or the belt is not enough off-center, then corrected with the clamping screws on the tail pulley, the tension and the concentricity of the belt. It is important that the belt is not too tight as this may affect the life of the bearings and the belt. Contamination of the conveyor belt is to be avoided by regular cleaning (see section 6.2). This preserves the overall system longevity.

6.6 Drive unit

The bevel gear motor requires no special maintenance. An oil change is carried out in regular intervals according to the manufacturer.

6.7 Bearings

The bearings of the support rollers are permanently lubricated and require no maintenance. The bearings of the drive and tail pulley should be pressure tested at least 1x a year with a grease gun and be completely replaced if there is overheating or grinding noise.

Table 9.2 Mixing properties of grease

Soap base	Ca	Na	Al	Ba	Li
Ca	○	△	△	×	△
Na	△	○	△	×	×
Al	△	△	○	×	×
Ba	×	×	×	○	×
Li	△	△	×	×	○

○ Mixing will varies depending on properties of both greases.
△ Mixing may produce considerable variations of properties.
× Mixing will cause a drastic change of properties.

Table 9.4 Relubrication quantity

Unit g

Bearing number		Quant.	Bearing number	Quant.
UC201D1		1.1	UC305D1	2.0
UC202D1		1.1	UC306D1	3.0
UC203D1		1.1	UC307D1	4.3
UC204D1		1.1	UC308D1	5.5
UC205D1		1.3	UC309D1	7.5
UC206D1	UCX05D1	1.9	UC310D1	10.5
UC207D1	UCX06D1	2.7	UC311D1	13
UC208D1	UCX07D1	3.5	UC312D1	16.5
UC209D1	UCX08D1	4.1	UC313D1	20
UC210D1	UCX09D1	4.6	UC314D1	23.5
UC211D1	UCX10D1	6.0	UC315D1	27.5
UC212D1	UCX11D1	8.5	UC316D1	33
UC213D1	UCX12D1	10.5	UC317D1	38
UC214D1	UCX13D1	12	UC318D1	45
UC215D1	UCX14D1	13	UC319D1	50
UC216D1	UCX15D1	15.5	UC320D1	60
UC217D1	UCX16D1	16.5	UC321D1	70
UC218D1	UCX17D1	21	UC322D1	85
	UCX18D1	22.5	UC324D1	100
	UCX20D1	35.5	UC326D1	125
			UC328D1	150

Note) Relubrication quantity of UK, UEL type is same as UC type

Table 9.3 Standard relubrication frequencies

Type of bearing	Symbol	dn Value	Environmental conditions	Operating temperature °C	Relubrication interval	
					Hours	Period
Standard	D1	40 000 max	Ordinary	–15 to +80	1 500 to 3 000	6 to 12 mon.
Standard	D1	70 000 max	Ordinary	–15 to +80	1 000 to 2 000	3 to 6 mon.
Standard	D1	70 000 max	Ordinary	+80 to +100	500 to 700	1 mo.
Heat-resistant	HT2D1	70 000 max	Ordinary	+100 to +150	300 to 700	1 mo.
Heat-resistant	HT2D1	70 000 max	Ordinary	+150 to +180	100	1 wk.
Cold-resistant	CT1D1	70 000 max	Ordinary	–50 to +120	1 000 to 2 000	3 to 6 mo.
Standard	D1	70 000 max	Very dusty	–15 to +100	100 to 500	1 wk. to 1 mo.
Standard	D1	70 000 max	Exposed to water splashes	–15 to +100	30 to 100	1 day to 1 wk.

7 Accessoires

7.1 Spare parts

(when ordering with No. always specify with the **order number**)

Item No.	Match code	Designation
705010020	ATRO500/320/65/50	Drive drum for BGM 500
705020024	ATRO650/320/65/50	Drive drum for BGM 650
705030016	ATRO800/320/65/50	Drive drum for BGM 800
705040012	ATRO1000/420/80/60	Drive drum for BGM 1000
705050006	ATRO1200/420/80/60	Drive drum for BGM 1200
706010006	UTRO500/320/50	Deflection drum for BGM 500
706020007	UTRO650/320/50	Deflection drum for BGM 650
706030006	UTRO800/320/60	Deflection drum for BGM 800
706040005	UTRO1000/420/80	Deflection drum for BGM 1000
705050006	UTRO1200/420/80	Deflection drum for BGM 1200
710020001	RB89-20/200/SW15x10	Carrying idler for upper belt GB 500 (B)
710020003	RB89-20/250/SW15x10	Carrying idler for upper belt GB 650 (B)
710020005	RB89-20/315/SW15x10	Carrying idler for upper belt GB 800 (B)
710020007	RB89-20/380/SW15x10	Carrying idler for upper belt GB 1000 (B)
710020009	RB89-20/465/SW15x10	Carrying idler for upper belt GB 1200 (B)
710020002	RB89-20/600/SW15x10	Carrying idler for lower belt GB 500 (B)
710020004	RB89-20/750/SW15x13	Carrying idler for lower belt GB 650 (B)
710020006	RB89-20/950/SW15x13	Carrying idler for lower belt GB 800 (B)
710020008	RB89-20/1150/SW15x13	Carrying idler for lower belt GB 1000 (B)
710020010	RB89-20/1400/SW15x13	Carrying idler for lower belt GB 1200 (B)
717010004	GB 500 EP400/3 4:2	Rubber flat belt, belt width 500 mm
717010006	GB 650 EP400/3 4:2	Rubber flat belt, belt width 650 mm
717010007	GB 800 EP400/3 4:2	Rubber flat belt, belt width 800 mm
717010009	GB 1000 EP400/3 4:2	Rubber flat belt, belt width 1000 mm
717010011	GB 1200 EP400/3 4:2	Rubber flat belt, belt width 1200 mm
717020004	GB 500 EP400/3 3:1,5-17	Rubber steep conveyor belt, belt width 500 mm
717020007	GB 650 EP400/3 3:1,5-17	Rubber steep conveyor belt, belt width 650 mm
717020009	GB 800 EP400/3 3:1,5-17	Rubber steep conveyor belt, belt width 800 mm
717020011	GB 1000 EP400/3 3:1,5-17	Rubber steep conveyor belt, belt width 1000 mm
717020013	GB 1200 EP400/3 3:1,5-17	Rubber steep conveyor belt, belt width 1200 mm
707010007	KSGM4,0/73/50	Bevel geared motor, 4.0 kW
707020004	KSGM5,5/73/50	Bevel geared motor, 5.5 kW
707030004	KSGM7,5/73/50	Bevel geared motor, 7.5 kW
707030019	KSGM7,5/57/60	Bevel geared motor, 7.5 kW
705000002	GUM-GB500/600/320	Rubber coating of ATRO GB 500
705000004	GUM-GB650/750/320	Rubber coating of ATRO GB 650
705000006	GUM-GB800/900/320	Rubber coating of ATRO GB 800
705000009	GUM-GB1000/1100/420	Rubber coating of ATRO GB 1000
705000012	GUM-GB1200/1300/420	Rubber coating of ATRO GB 1200
726010005	UCP213/65	Pedestal bearing for ATRO GB500-800
726010006	UCP216/80	Pedestal bearing for ATRO GB1000-1200
726020003	UCT210/50	Tension head bearing for UTRO GB500-650
726020004	UCT212/60	Tension head bearing for UTRO GB800
726020006	UCT216/80	Tension head bearing for UTRO GB1000-1200

724010003	SSPER-BGML500-650	Spindle tensioning device painted, GB500-650
724010006	SSPER-BGML800	Spindle tensioning device painted, GB800
724010004	SSPER-BGML1000	Spindle tensioning device painted, GB1000
724010005	SSPER-BGML1200	Spindle tensioning device painted, GB1200
724020003	SSPER-BGMV500-650	Spindle tensioning device galvanized, GB500-650
724020006	SSPER-BGMV800	Spindle tensioning device galvanized, GB800
724020004	SSPER-BGMV1000	Spindle tensioning device galvanized, GB1000
724020005	SSPER-BGMV1200	Spindle tensioning device galvanized, GB1200

Articles not listed must be requested separately!

7.2 Ordering adress

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8. Recycling

Non-usable conveyor belts should not be removed as a whole unit, but individual parts and the type of materials and recycled. Non-recyclable components must be recycled properly.

BERTRAM®
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