



# Operating manual

for

**BERTRAM**<sup>®</sup> Conveyor  
Type SF



# Table of Contents

|                                             |    |
|---------------------------------------------|----|
| <b>1. Declaration of conformity</b>         | 03 |
| <b>2. Safety</b>                            |    |
| <i>Explanation for symbol and Reference</i> | 05 |
| <i>Basic safety</i>                         | 06 |
| <i>Intended use</i>                         | 06 |
| <i>Reasonably predictable misuse</i>        | 06 |
| <b>3. Description of device</b>             |    |
| <i>General things</i>                       | 06 |
| <i>Description of the functions</i>         | 06 |
| <i>Technical data</i>                       | 07 |
| <b>4. Installation instructions</b>         |    |
| <i>Transport</i>                            | 10 |
| <i>Installing the device</i>                | 10 |
| <i>Power supply</i>                         | 11 |
| <i>Connection schematic</i>                 | 12 |
| <b>5. Manual</b>                            |    |
| <i>Normal operation</i>                     | 12 |
| <b>6. Maintenance instructions</b>          |    |
| <i>Troubleshooting an repair</i>            | 13 |
| <i>Cleaning</i>                             | 14 |
| <i>Switch drive motor</i>                   | 15 |
| <i>Change belt</i>                          | 15 |
| <i>Align belt</i>                           | 15 |
| <i>Drive unit</i>                           | 15 |
| <i>Bearings</i>                             | 15 |
| <b>7. Accessories</b>                       |    |
| <i>Spare parts</i>                          | 17 |
| <i>Ordering address</i>                     | 18 |
| <b>8. Recycling</b>                         | 18 |

## 1. Declaration of conformity

### EC Declaration of Conformity according to the EC Machinery Directive 2006/42/EC, Annex IIA

The producer: Bertram Förderanlagen und Arbeitsbühnen GmbH, Junkersstraße 2,  
D-30179 Hanover  
[www.bertram-foerderbaender.de](http://www.bertram-foerderbaender.de), Phone: +49-511-67483-77

hereby declares that the partly completed:

#### **Type SF**

as far as possible from the supply - corresponds to basic safety and health requirements of the **Machinery Directive 2006/42/EC Annex I.**

The machine further complies with:

Relevant EC Directives:

- Machinery directive 2006/42/EC
- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

Applied harmonized standards:

- ISO 12100:2010

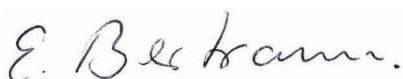
The technical documentation for this machine was created related to Annex VII, Part A.  
The manufacturer undertakes to transmit electronically these technical  
Documentation national authorities on request.

Person authorized to compile the technical documentation:

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

**This declaration loses validation, by changing the machine without consultation with us!**

**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 divided in danger levels and classified to ISO 3864-2.

|  <b>DANGER</b>      |                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | Indicates a directly threatening danger.<br>If You don't follow the information, death or serious personal injury (disability) could result.         |
|  <b>WARNING</b>     |                                                                                                                                                      |
|                    | Indicates a potential dangerous situation.<br>If You don't follow the information, death or serious personal injury (disability) could result.       |
|  <b>CAUTION</b>   |                                                                                                                                                      |
|                   | Indicates a possibly dangerous situation.<br>If You don't follow the information, property damages or light to medium personal injury could result.  |
|  <b>REFERENCE</b> |                                                                                                                                                      |
|                   | 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**

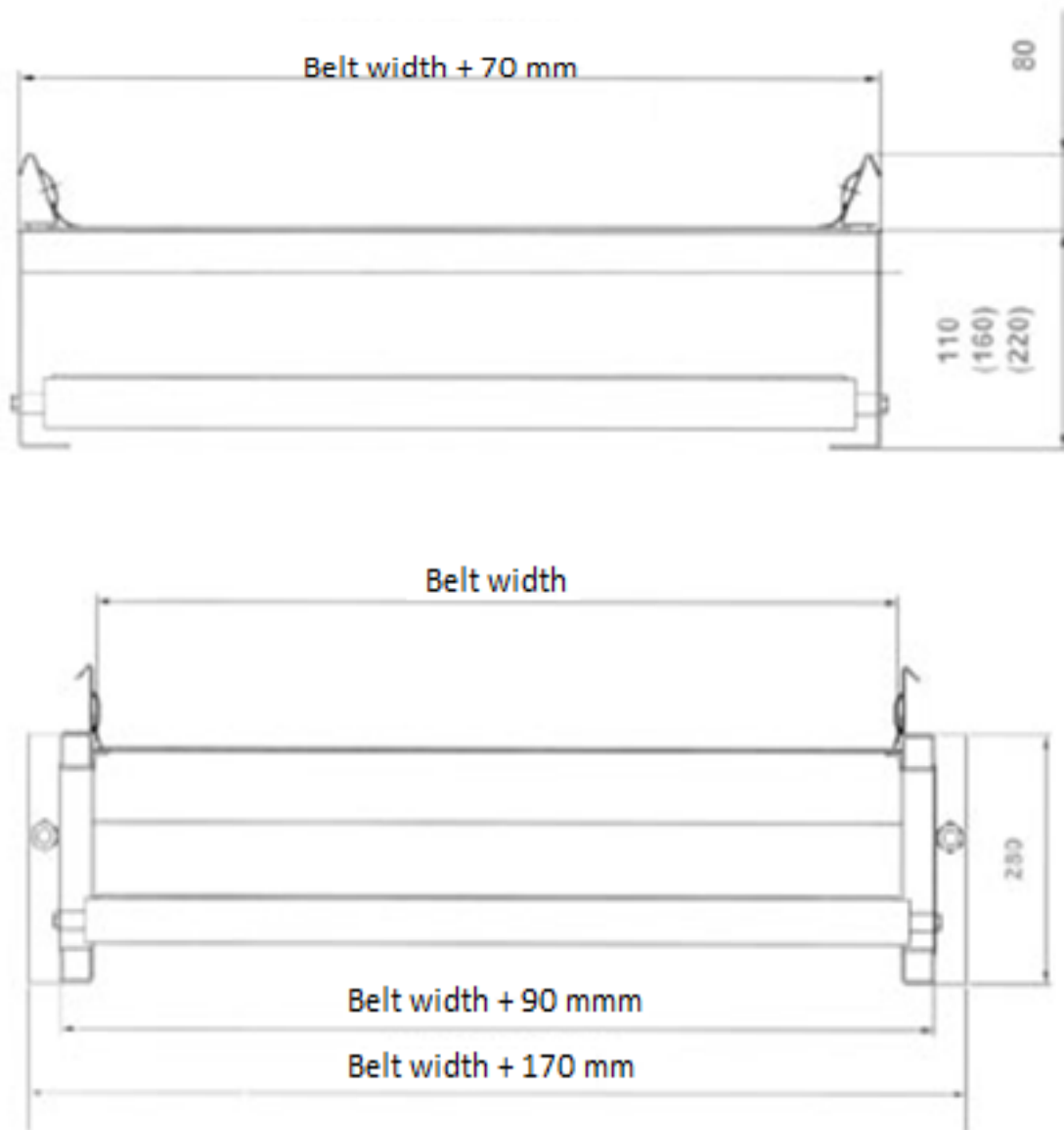
The final belt conveyor is suitable for the carriage of bulk goods. The engines are installed on the appropriate length for the specified maximum load.

## **3.2 Description of the functions**

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

#### Unit load conveyors type SF



## 4. Installation instructions

### 4.1 Transport

|  <b>WARNING</b> |                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | <p>Improper use of transport means (trucks, overhead crane, tools, slings, etc.) can cause bruising and other injuries.</p> <p>Optimum performance of:</p> <ul style="list-style-type: none"><li>- Transport and assembly instructions and note compliance</li><li>- Transport used properly</li></ul> |

### 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.

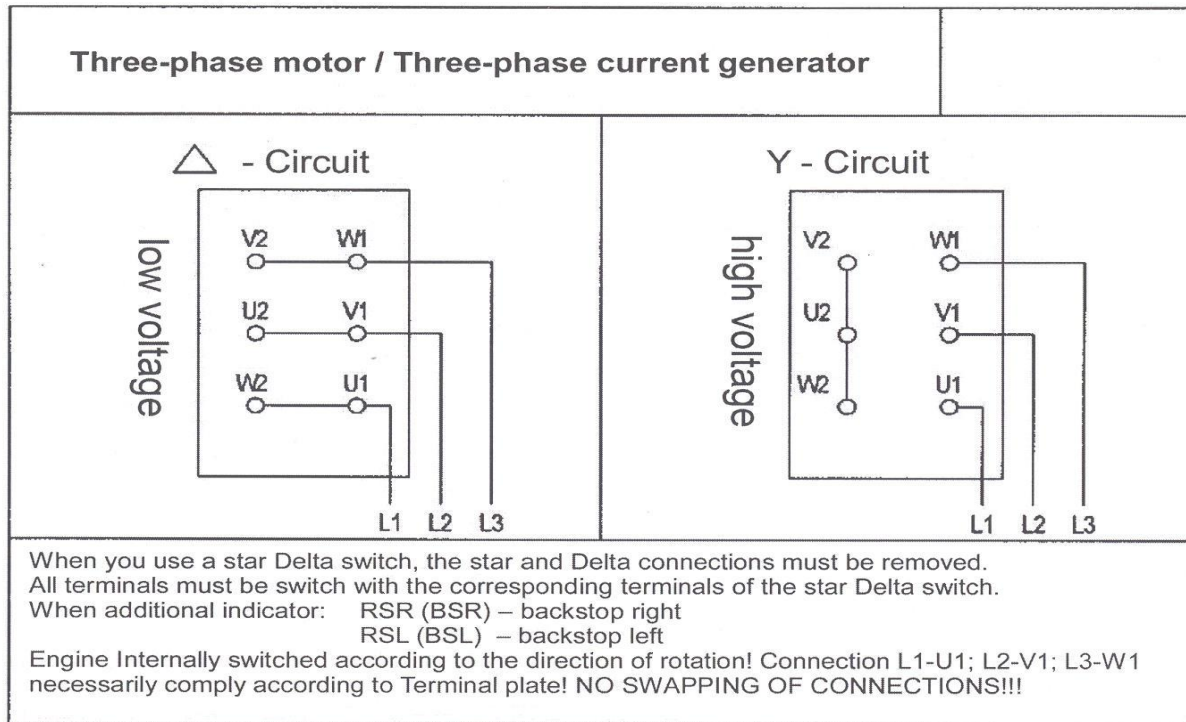
Further installation instructions for accessories are available on request.

### **4.3 Power supply**

|  <b>WARNING</b> |                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <ol style="list-style-type: none"><li>1 Work on the electrical supply may only be performed by trained, accredited experts!</li><li>2 The power supply must be carried out on site by a GFCI (ground fault circuit interrupter)!</li><li>3 The conveyor should be operated only on the nameplate of the gearmotor with the specified power supply!</li></ol> |

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 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | <ol style="list-style-type: none"><li>1 Changes the direction of rotation of the motor (reversing), attention must be paid to the correct directional stability of the belt!</li><li>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!</li><li>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.</li></ol> |

## 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

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

|  <b>REFERENCE</b> |                                                                                                    |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|                   | Visible bolts or screw nuts regularly for tightness.<br>The intervals are set by the plant itself. |

### 6.1 Troubleshooting and repair

|  <b>WARNING</b> |                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <ul style="list-style-type: none"><li>- Work on the electrical supply may only be performed by trained, accredited experts!</li><li>- Prefer removing the engine casing plug!</li></ul> |

Defective interfering components must be replaced.

|  <b>REFERENCE</b> |                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <p>Only original spare and wear parts are used!</p> <p>The use of heterologous components is associated with loss of the guarantee for the delivered components.</p> |

### ***Belt conveyor does not run after power***

#### **Fault finding:**

Interrupted supply cable to the drive unit  
Belt slipping on the drive pulley  
Drive unit (bevel geared motor) is defective

#### **Fault repair:**

Supply cable to replace  
Rubber belt-tension control  
Check the Drive unit and replace it if necessary

### ***Belt conveyor has strong noise***

#### **Fault finding:**

Belt touches the side guide

#### **Fault repair:**

\* 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.

×

**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

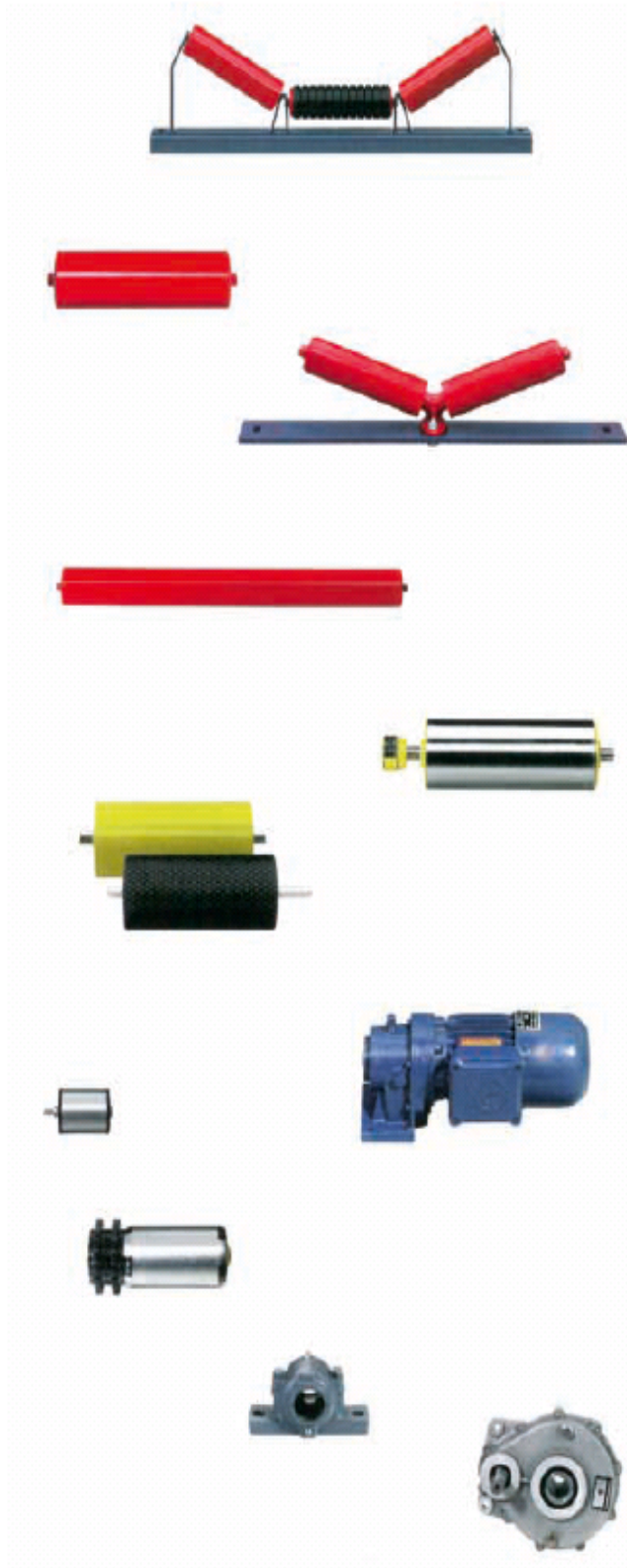
**Table 9.3 Standard relubrication frequencies**

| 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**)



- **Idlers**
- **Idler stations**
- **Motors**
- **Gears**
- **Pulley**
- **Bearing**
- **Belts**
- **Hopper**
- **Hoods**
- **Components**
- **etc.**

#### ■ **Storage capacities and delivery times**

For short delivery times **BERTRAM** has a storage capacity that is probably unique in this industry.

Our conveyor range includes:

- Modular systems,
- Complete conveyors,
- Unit load conveyors,
- Accessories and
- Spare parts.

#### ■ **Supply of spare parts**

Also for quick supply of spare parts, we keep a well-assorted stock for you. Thus we are able to respond in urgent cases immediately to your advantage. This saves not only time but also unnecessary costs.

#### ■ **Service and factory**

Our trained staff are available for you. Whether it comes to repairs in our factory, or short-term assistance is required on site, you can be sure **we are there for you!**

#### ■ **Safety**

All new conveyors that we deliver to you have **safety devices** for movable parts, **CE mark** and **professional documentation** in accordance to the machinery directive 2006/42/EG.

## 7.2 Ordering adress

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

fon.  
email  
web  
shop

+49-511-67483-77  
[vk2@bertram-gruppe.de](mailto:vk2@bertram-gruppe.de)  
[www.bertram-foerderbaender.de](http://www.bertram-foerderbaender.de)  
[www.bertram-shop.de](http://www.bertram-shop.de)

## 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.

