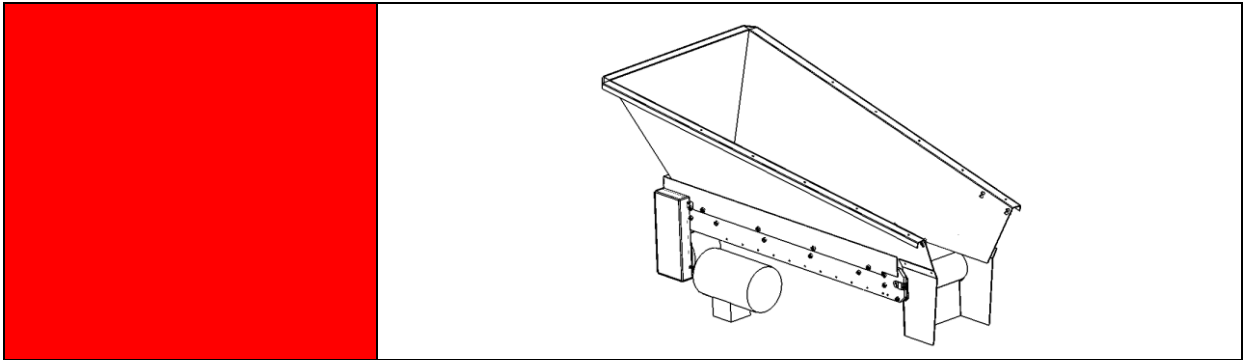


Replenishment belt hopper NFB 70 / NFB100 / NFB200



Translation of original operating instruction

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This instruction manual applies to:

Type		Order number	
Replenishment belt hopper	NFB70	Standard	50011283
		with quick discharge	50051401
	NFB100	Standard	50011286
		with quick discharge	50075525
	NFB200	Standard	50011288
		with quick discharge	50075580

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1 Declaration of incorporation for the incomplete machine

Declaration of incorporation in compliance with the European Machinery Directive 2006/42/EC, Annex II B

The manufacturer: Afag GmbH, Wernher-von-Braun-Strasse 5a, D-92224 Amberg
www.afag.com – Phone: +49 (0)9621 650 27-0

hereby declares that the incomplete machine: **Replenishment belt hopper**

Designation: **NFB70 / NFB100 / NFB200**

complies with the basic safety and health requirements of the Machinery Directive **2006/42/EC Annex I**.

The incomplete machine also complies with the following:

Relevant EC Directives:

Machinery Directive 2006/42/EC

Low Voltage Directive 2006/95/EC

EMC Directive 2004/108/EC

Applied harmonised standards:

EN ISO 12100-1; EN ISO 12100-2

The technical documentation for this incomplete machine was prepared in accordance with Annex VII, Part B. Upon request, the manufacturer undertakes to transmit these technical documents electronically to national authorities, if requested.

Authorised representative for the compilation of the instruction manual:

Edbauer Franz
Development Manager ZTK
Afag GmbH

The start-up of the incomplete machine is prohibited until installed in a complete machine that complies with the regulations of the EC Machinery Directive and until the EC Declaration of Conformity according to Annex II A is available.

City - Date: Company: Afag GmbH

Amberg, 23 Dec. 2009 Last name / first name
Mr. Klaus Bott

Managing Director
Afag GmbH


2 Safety instructions

2.1 Explanation of symbols and notes


Symbols: Installation and start-up is to be performed only by qualified personnel in accordance with the operating manual.

Please observe the meaning of the following symbols and notes. They are grouped into risk levels and classified according to ISO 3864-2.


DANGER

	<p>Indicates imminent danger.</p> <p>If the information is ignored, it will result in death or serious injury (disability).</p>
---	---


WARNING

	<p>Indicates a possible dangerous situation.</p> <p>If the information is ignored, it will result in death or serious injury (disability).</p>
---	--

CAUTION

	<p>Indicates a possibly dangerous situation.</p> <p>If the information is ignored, it will result in material damage as well as in minor or medium personal injury.</p>
---	---

NOTE

	<p>Signifies general information, useful tips and recommendations that, however, do not affect the safety and health of the personnel.</p>
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2.2 Basic safety instructions

This operating manual provides the basis for the safe use and operation of the replenishment belt hopper. This operating manual and, in particular, the included safety instructions are to be observed by all individuals working with and on the replenishment belt hopper. In addition, all rules and regulations concerning the accident prevention applicable for the site of operation are to be complied with.

The operating manual is to be kept at the place of operation of the replenishment belt hopper at all times.

2.3 Appropriate use

The replenishment belt hoppers are intended for the storing of component parts of different sizes, forms and types of material.

The workpieces must meet the following requirements in order to ensure a problem-free operation:

- they must be free of oil, grease and burrs
- they must not be sticky
- they must not be statically charged
- they must not be magnetic (no self-magnetism)
- they must be free of dirt and not be mixed with foreign parts
- rubber parts can be powdered with talcum

3 Description of the device

3.1 General

(See Figure 1)

In combination with a dosing channel, the replenishment belt hopper is used to store bulk material.

The basic design of the replenishment belt hopper consists of a conveyor belt (2) guided inside a frame (1) which transports parts on an inclined chute (spout) (3 and 4). In order to achieve a certain filling volume, a parts storage container (trough) (5) is attached to this conveyor belt. The conveyor belt is powered by a worm gear motor (6).

3.2 Functional description

When the control device of the hopper's drive unit receives a start signal, e.g. from the filling level control system of a feeder (low filling level of a helical conveyor), the replenishment belt hopper will then feed the bulk material inside the trough via the part chute into the feeder. This replenishment belt hopper will continue to do so until the control device of the driving unit receives a stop signal from the filling level control system of the feeder (maximum filling level of a bowl feeder).

Design of the replenishment belt hopper

1. Base frame
2. Conveyor belt
3. Parts chute: hinged spout
4. Part chute: chute spout
5. Trough
6. Drive unit
7. Setscrew hinged spout
8. Belt tensioning screw
9. Flow regulation curtain

Areas of application for the replenishment belt hopper:

- Storage of parts for sorting and feeding devices (longer filling intervals for the operating personnel)
- Feeding of packaging systems and scales
- Regulated supply of parts
- Optimised feeding behaviour of feeding equipment
- Reducing the size of feeding equipment (thus cost reductions and space-savings due to external supply of parts)

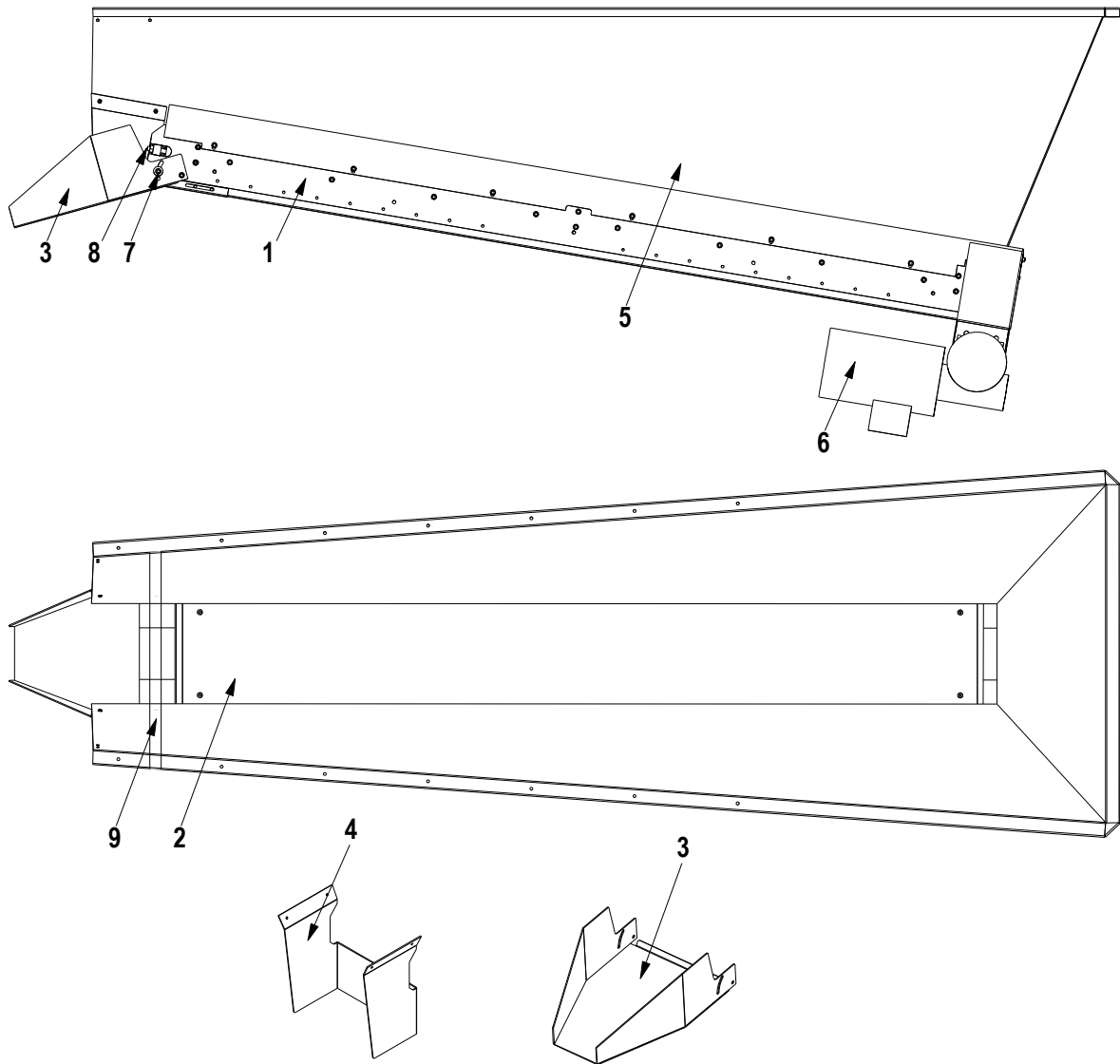


Figure 1

3.3 Technical data

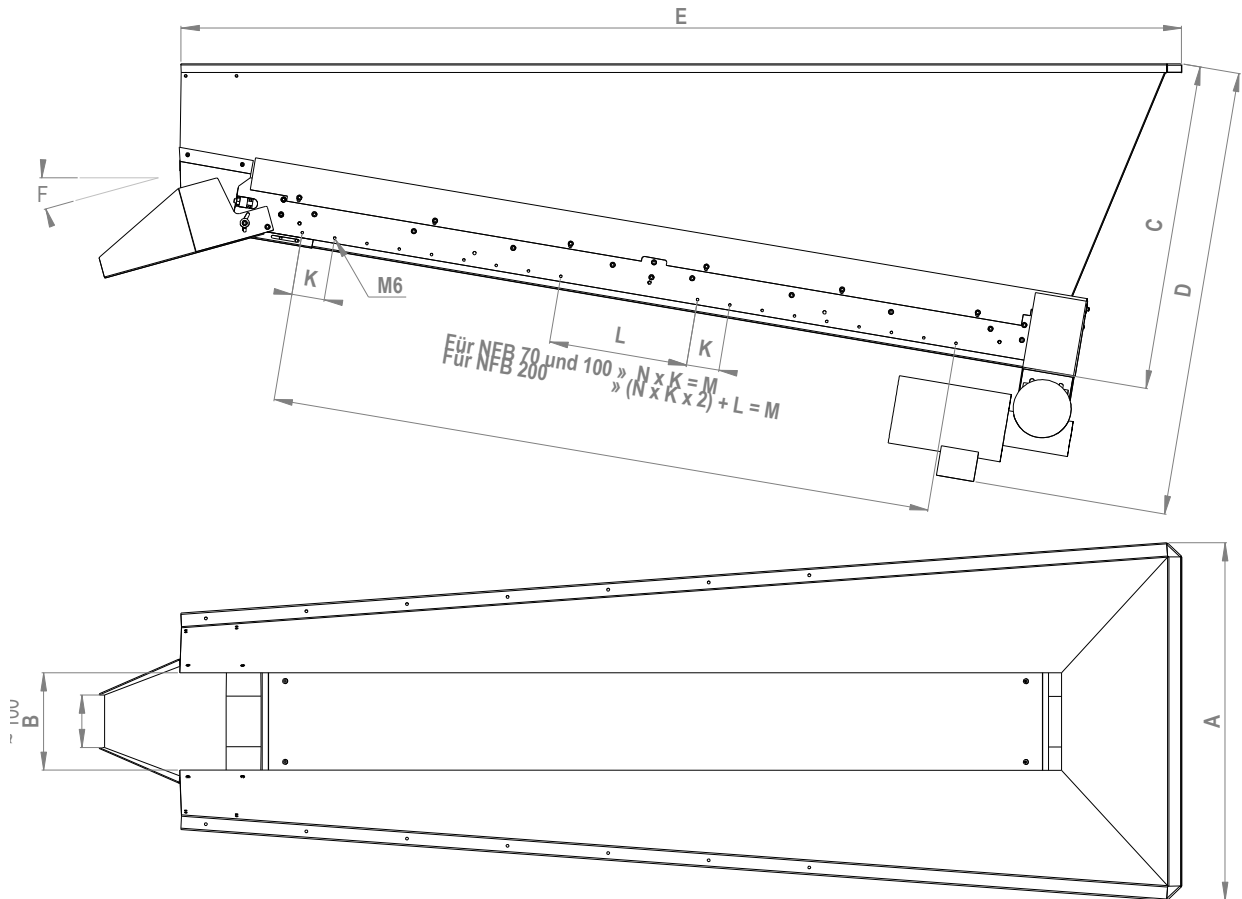




Figure 2



Table 1: Technical data

Description		Units	NFB70	NFB100	NFB200	Three phase motor with helical gear box
Dimensions	A	[mm]	600	600	709	-
	B	[mm]	193	193	193	
	C	[mm]	480	536	646	
	D	[mm]	719	774	885	
	E	[mm]	1245	1460	1985	
	F	[°]	0-30	0-30	0-30	
	G	-	M6	M6	M6	
	K	[mm]	65	65	65	
	L	[mm]	-	-	275	
	M	[mm]	650	845	1315	
	N		10	13	8	
Usable volume		[litre]	70	100	200	
Maximum filling weight		[kg]	200	200	200	
Operating voltage		[VAC]	-			230/400/460
Mains frequency		[Hz]	-			50/60
Belt speed		[m/min]	-			1,7
Motor output at 230V / 400V		[W]	-			180
Motor output at 460V		[W]	-			210
Current draw 230V		[A]	-			1,25
Current draw 400V		[A]	-			0,72
Current draw 460V		[A]	-			0,64
Protection class		[IP]	-			54
Environmental conditions operation: temperature range		[C°]	-10 to +45			
Noise emission: continuous sound pressure level without transport material		[dB]	<70			
Measuring height / distance		[m]	1,6 / 1			
Direction of measurement towards source of noise		[°]	90			
Measurement method		-	A			

4 Assembly instructions


4.1 Transport

 WARNING	
	<p>Improper use of transport means (industrial trucks, cranes, technical aids, sling gear etc.) may lead to bruises and other injuries.</p> <p>Required behaviour:</p> <ul style="list-style-type: none">▪ Observe and follow the transport and maintenance instructions▪ Proper use of transport means

 CAUTION	
	<p>During transport, the replenishment belt hopper may only be lifted at the sub base.</p> <p>Trough, motor, hinged spout and chute spout are no lifting points.</p>

4.2 Installing the unit

Depending on the application and the available space, the replenishment belt hopper can be screwed directly to a base plate of the feeding equipment or it can be placed at the base of the feeding equipment using a height-adjustable stand and then be adjusted in height. In case the stand is equipped with wheels, the wheel holding brake is to be applied once the operating position has been reached in order to prevent an unchecked rolling of the device.

NOTE	
	<p>When storing parts for vibrating conveyors, make sure that the parts falling off the chute do not fall onto the baffles affecting the function of the device. The parts should be introduced into the vibrating conveyor at roughly the centre position.</p>

4.3 Power supply

WARNING



Any work performed on the electrical supply may only be performed by trained, authorised, qualified personnel!

The power supply must be protected by an FI switch (provided by the customer).

The replenishment belt hopper may only be operated with the power supply specified on the name plate.

When operating at 400VAC, the replenishment belt hopper is directly connected inside the control cabinet and is switched on and off by a contactor. The replenishment belt hopper must be protected against overload by means of a protective switch.

When operating at 230VAC, the capacitor (16 μ F) 50232836 and the fastening buckle 50232835 must be used.

When operating at 230VAC, the replenishment belt hopper must be connected to the belt motor control SE621 (see Figure 3).

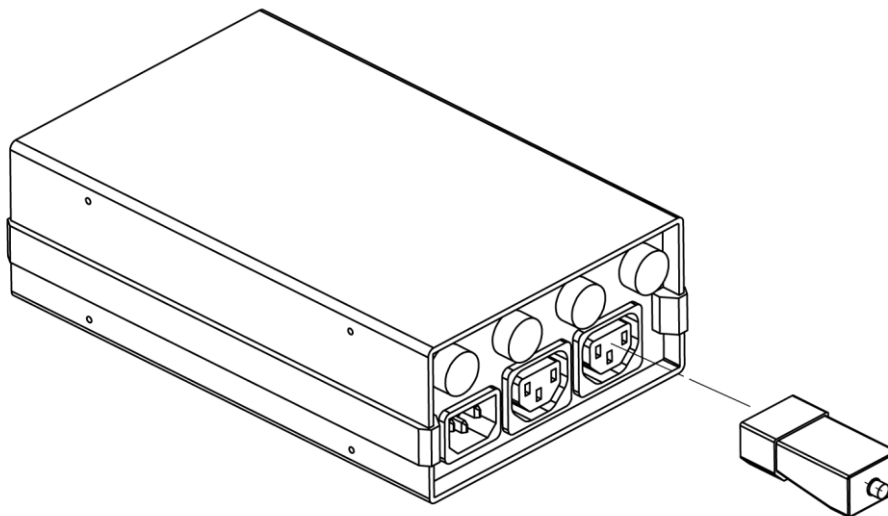


Figure 3

4.4 Setting options

(See Figure 4)

4.4.1 Parts chute

Depending on the application (parts, available space), a hinged spout (3) or a chute spout (4) may be used. When storing parts for vibratory conveyors, make sure that the parts falling off the chute do not fall onto the baffles affecting the function of the device. The parts should be placed in the centre position of the vibratory conveyor.

- Hinged spout: The incline of the chute can be adjusted after the screws (7) have been loosened.
- Chute spout: No setting options are available

4.4.2 Flow regulation curtain

The flow regulation curtain is located at the discharge end of the conveyor belt. This curtain prevents in case of large loads that too many parts will fall onto the chute while the conveyor belt is not operating. If an unimpeded flow of larger parts is not possible, the curtain is to be shortened by means of a suitable tool to optimise the flow.

4.4.3 Belt tension

The belt has been tensioned at the factory. For readjusting the tension see chapter 6.3

4.4.4 Chain tension

The chain inside the drive unit (6) has been tensioned at the factory. A readjusting of the tension is usually not necessary but can be carried out, if required. For readjusting the tension see chapter 6.6.

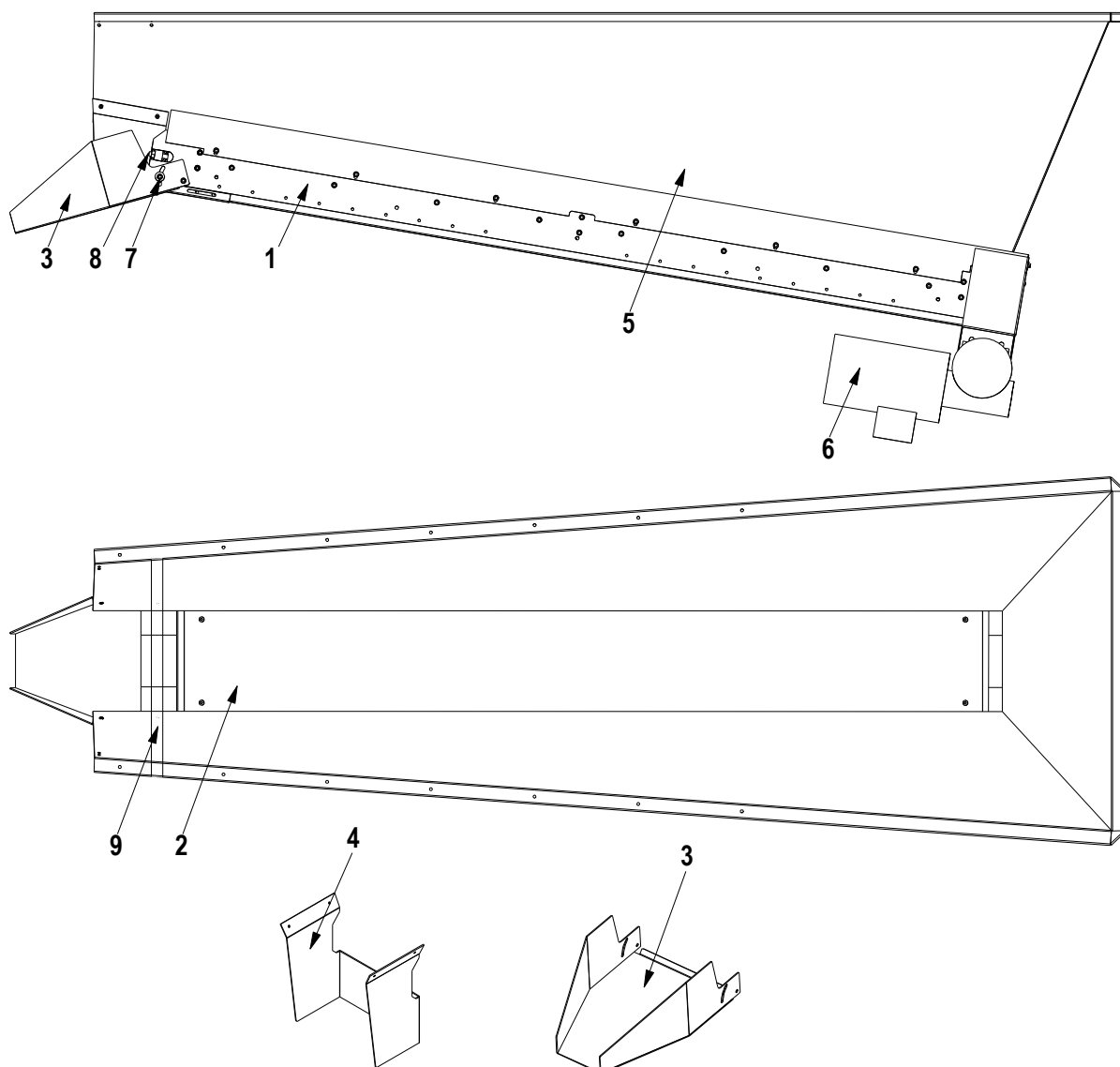




Figure 4



5 Operating instructions

5.1 Standard operation

No further adjustments are required for the standard operation. An uninterrupted operation only requires the re-filling of the replenishment belt hopper.

 WARNING	
	Any work performed on the electrical supply may only be performed by trained, authorised, qualified personnel!

5.2 Hazards

 CAUTION	
	<p>Despite a slow belt speed, operating personnel may be exposed to risks due to body parts drawn into the device when using or handling the device. These risks may exist in the following areas:</p>

- a. Around the toothed wheels / chain (in case of a dismantled cover)
- b. Bottleneck hinged spout-conveyor belt (bottom side of replenishment belt hopper)
- c. Bottleneck chute spout-conveyor belt (bottom side of replenishment belt hopper)
- d. Bottleneck trough-conveyor belt and cover-conveyor belt (back side and/or bottom side of replenishment belt hopper)

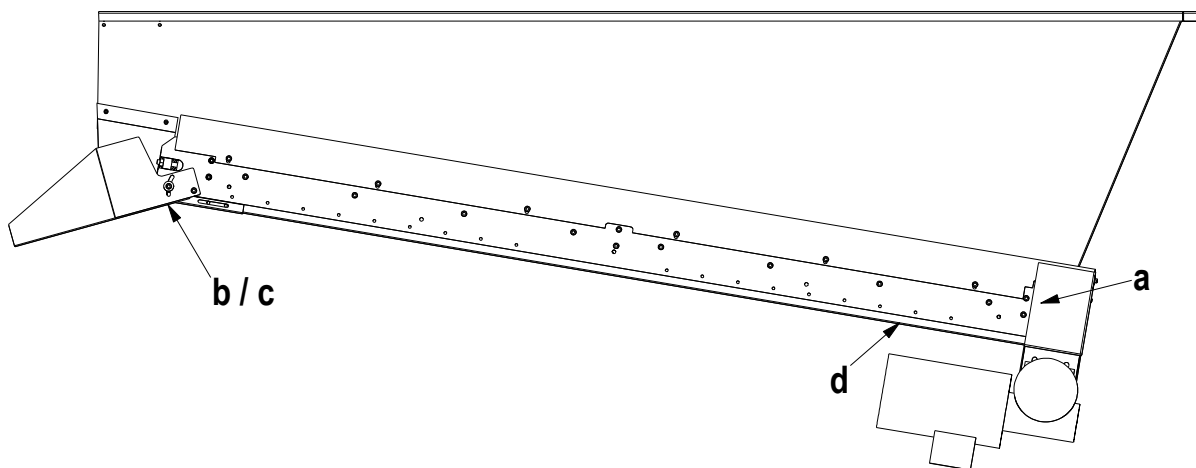



Figure 5

NOTE	
	<ul style="list-style-type: none"> ▪ Disconnect the supply voltage prior to the assembly or disassembly and when performing modifications to the setup or replacing fuses. ▪ Operation only with properly mounted toothed wheel and/or chain cover (a) ▪ No handling at the above mentioned bottlenecks (b, c, d) when connected to supply voltage and/or during the operation. ▪ Should there be any risk to the operating personnel despite these measures due to the use of the device, the operator of the device has to provide a suitable cover for the hazardous areas.

6 Maintenance instructions

WARNING



The electrical equipment of the conveyor belt must be checked at regular intervals. Loose connections, burnt or damaged cables are to be removed immediately!

NOTE



Check screws for a tight fit.

6.1 Troubleshooting and fault repair

WARNING



- Any work performed on the electrical supply may only be performed by trained, authorised, qualified personnel!
- Pull the plug before removing the chain cover or belt cover!

Faults caused by defective components may only be repaired by replacing these defective components.

NOTE



Only Afag original spare and wearing parts may be used!

Replenishment belt hopper does not start after being switched on.	
Troubleshooting:	Fault repair
Broken/defective supply cable connected to drive unit	Replace supply cable
Belt slips on drive roll	Tension belt (see chapter 6.3)
Defective drive unit (worm gear motor)	Replace drive unit (see chapter 6.5) belt
Strong noise emissions of the replenishment belt hopper	
Troubleshooting:	Fault repair
Belt touches the side plates	Align belt (see chapter 6.3)

6.2 Cleaning

		Cleaning agent:	Cleaning method:
Conveyor belt:	HAG-12E	Vacuum cleaner	Vacuuming
	FNB-5E	Spirit	Clean with a moist cloth
	CNB-5E	Spirit	Clean with a moist cloth
Trough	INOX rough or polished	Pure benzene or Spirit	Ultrasonic bath
	Metaline	Soap water	Clean with moist cloth, let dry
	Polyurethane red Nextel	Pure benzene or spirit	Rub down with moist cloth and let it air dry, must not be filled into the dosing trough. The dosing channel must not be submerged into the cleaning bath
Cover	PET / Macrolon / plexiglass	Vacuum cleaner and antistatic spray	Vacuum before wiping down, spray in with antistatic spray and rub off.

 **CAUTION**



If cleaning agents or cleaning methods other than those mentioned above are used, the components can get permanently damaged so that the proper function of the replenishment belt hopper is no longer guaranteed.

 **WARNING**



The following requirements must be met when cleaning works are carried out:

- Wear safety goggles
- Provide sufficient ventilation when cleaning with volatile substances

6.3 Aligning and tensioning the conveyor belt

(See Figure 6)

The tension and the centric position of the conveyor belt are to be checked on a weekly basis. If the tension of the belt is not sufficient or off centre, the tension and the centric position of the belt can then be corrected using the adjusting screws (4).

It is important that the belt is not too tight as this may affect the service life of the bearing. A soiling of the conveyor belt is to be avoided by regular cleaning (see chapter 6.2). This will ensure a long service life of the overall system.

6.4 Replacing the belt

(See Figure 6)

1. Disconnect the power supply
2. Remove the trough (1), the spout (7) and the cover (6) from the frame (2)
3. Remove the tension of the belt using the tensioning screws on both sides (3 and 4).
4. After loosening all screws, remove the side wall (5) on the far side of the drive end from the bearing block (8) and release it from the frame (2).
5. Take down the old belt from the side and replace it with a new one.

The assembly is carried out in reverse order. When tensioning the new belt, make sure it is not off centre and that there is sufficient tension.

6.5 Drive unit

(See Figure 7)

No maintenance is required for the worm gear motor.

Replacing the drive:

1. Unscrew the cover (19) of the toothed wheels and the chain.
2. By loosening the screws (11), you can completely remove the drive unit (12) and replace it with a new one.

The assembly is carried out in reverse order. Make sure that the chain has the required tension (see chapter 6.6).

6.6 Chain

(See Figure 7)

To increase the service life of the chain, it should be greased using a commercially available chain spray approx. every 4 months. If necessary, the chain is to be tensioned or replaced.

1. Disconnect the power supply
2. Remove the cover (10) by loosening the screws located on the sides.
3. The chain can be tensioned or replaced by loosening the screws (11) and moving the drive unit along the long slots.
4. Reassemble the cover (10)

6.7 Bearing

No maintenance is required for the bearings of the drive and guide roller. With regard to the bearing, please contact the manufacturer (see chapter 7.3)

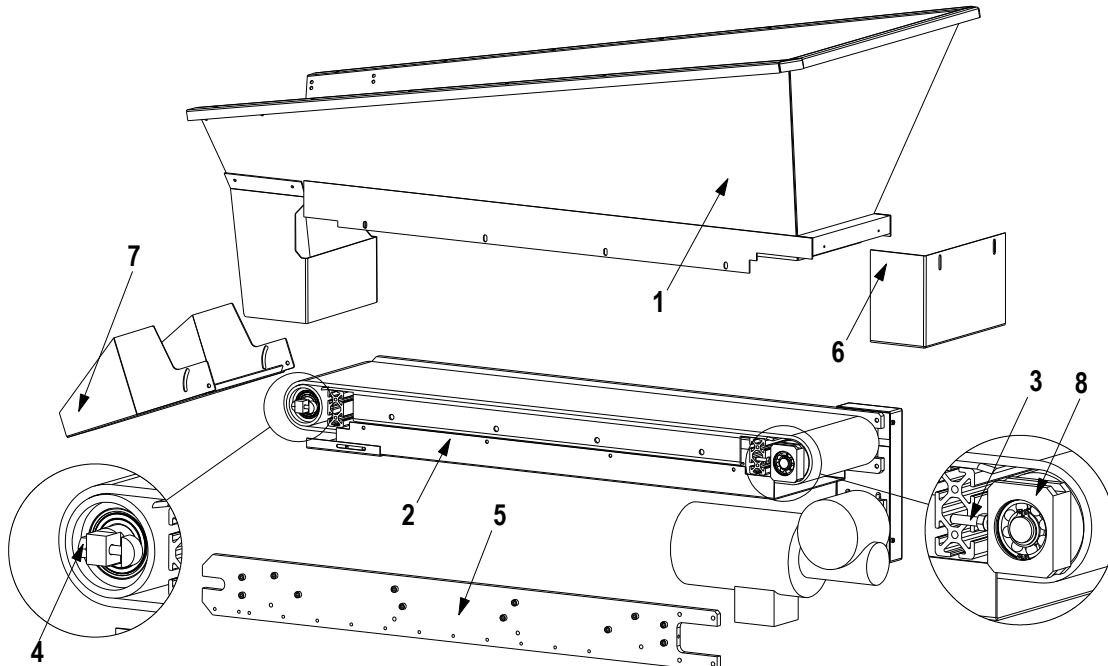


Figure 6

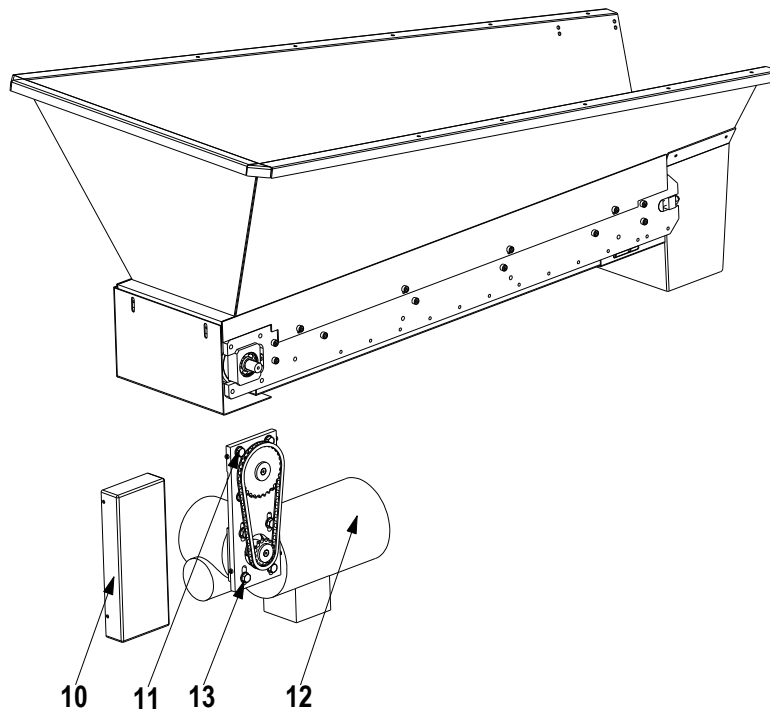


Figure 7

6.8 Wear and spare parts

Table 2: Wearing parts

Pos.	Type	Designation	Order number		
			NFB70	NFB100	NFB200
2	Roller chain	3/8" (06B-1) 455 TL.	11011807		
4	Groove ball bearing	6005-2RSR	50018166		
5	Ball joint bearing	2203-2RS-TV	50030348		
8	Chain wheel	with hub	15216612		
9	Chain wheel	with hub	15216649		
10/11/12	Belt	HAG-12E	50020065	50020066	50020068

Table 3: Spare parts

Pos.	Type	Designation	Order number		
			NFB70	NFB100	NFB200
1	Three phase AC motor with drive	1LA7070-6AA12, MRT 50A/100-FT/RL-71/85	50020162		
3	Locking element	455 TL. 11	11011808		

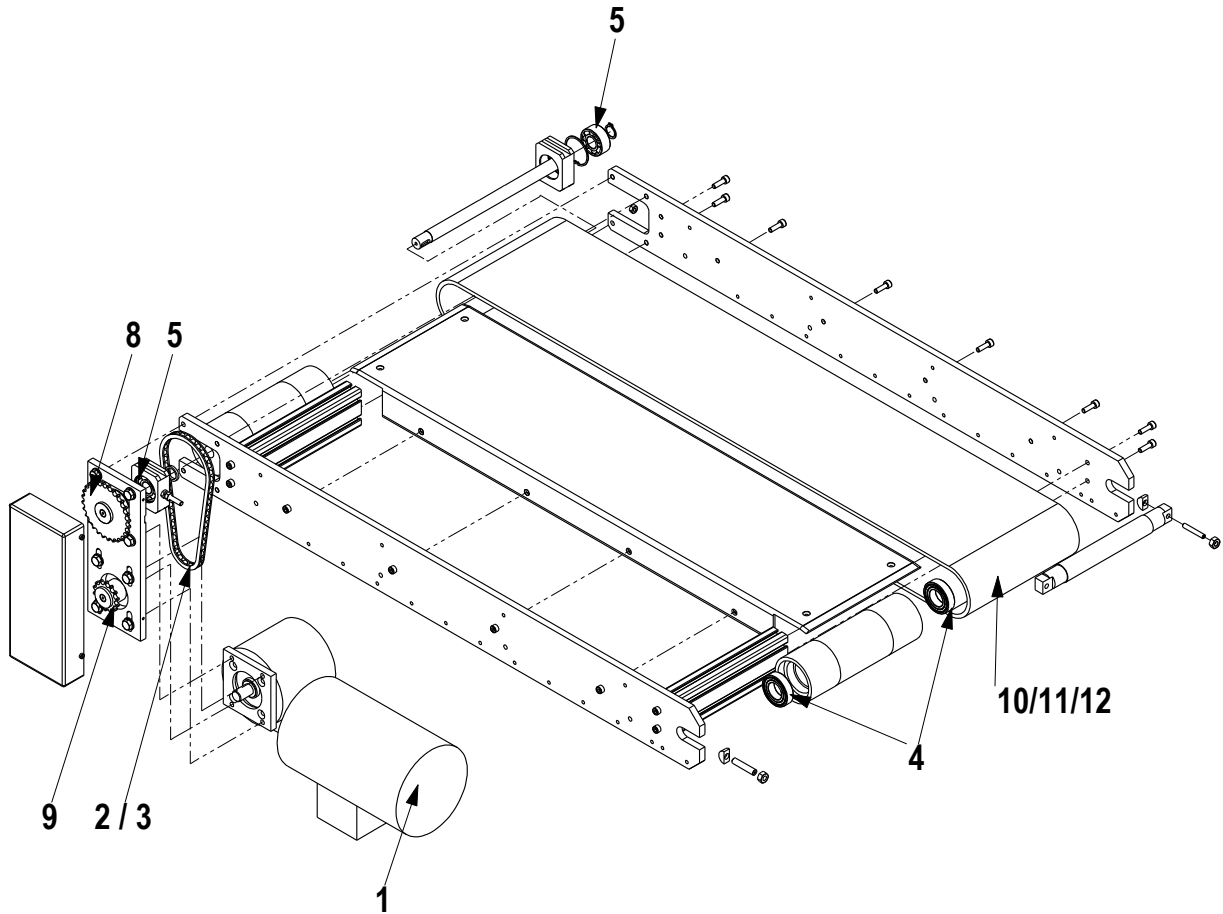


Figure 8

7 Accessories

7.1 Mounting parts

Table 4: Order data

Type		Order number	Description
Base frame	70 l	50063668	Height adjustable welded frame for installing the hopper directly at the line
	100 l	50066953	
	200 l	50067391	
Mobile base frame	70 l	50068104	Height adjustable mobile welded frame for installing the hopper on the floor directly at the line
	100 l	50068109	
	200 l	50068173	
Hinged chute		50018806	Adjustable chute 0°-30°
Chute spout		50201054	Attached vertical chute
SE621 belt motor control		50000396	230V / 50Hz

7.2 Control device

Table 5: Control devices for NVD

Type	Power supply	Order number	Comment
IRG2-N	230V/50Hz	15079949	Control with timer function using sensors
	115V/60Hz	15205642	
SE 621	230V/50Hz	50000396	Control with timer function using sensors

Third-party controllers can also be used as long as they meet the technical requirements.

7.3 Address for orders

Germany:

Afag GmbH
Wernher-von-Braun-Strasse 5a
D92224 Amberg (Germany)
Phone: ++49 (0) 96 21 / 65 0 27-0
Fax: ++49 (0) 96 21 / 65 0 27-390

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Zuführtechnik
Fiechtenstrasse32
CH - 4950 Huttwil
Phone: ++41 (0) 62 / 959 86 86
Fax: ++41 (0) 62 / 959 87 87

8 Disposal

Replenishment belt hoppers which can no longer be used must not be disposed of as a complete unit, but must be disassembled and recycled according to the type of material. Non-recyclable components must be appropriately disposed of.