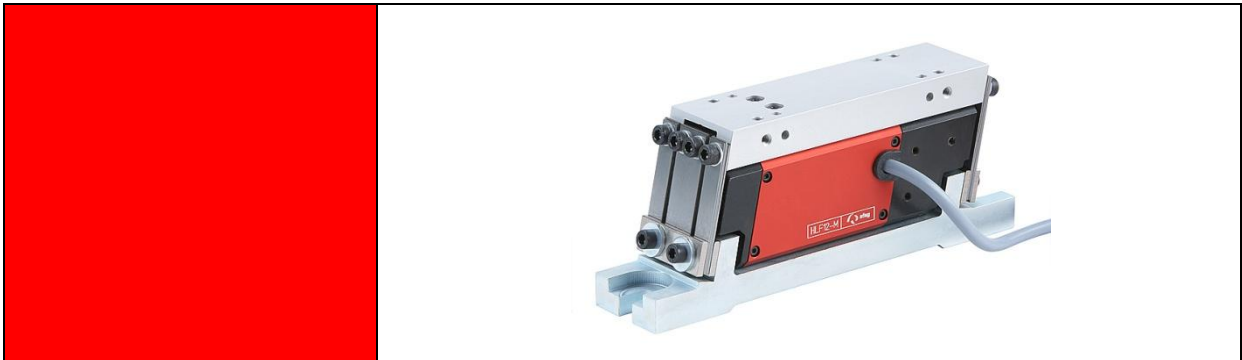


Linear feeder

HLF07-M / 12-M / 25-M



Translation of original instruction manual

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This operation instruction applies to:

Type		Order number	
Linear feeder	HLF07	230 V / 50 Hz	50162923
		115 V / 60 Hz	50162924
Linear feeder	HLF12	230 V / 50 Hz	50162925
		115 V / 60 Hz	50162926
Linear feeder	HLF25	230 V / 50 Hz	50162927
		115 V / 60 Hz	50162928

Version of Documentation:

BA_HLF07-25_R3_E.docx

Release:

3.0

Date:

2010-03-26

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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

herewith declares, that the incomplete machine: **Linear feeder HLF**

Designation: **HLF07-M / HLF12-M / HLF25-M**

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. 12. 2009 Last name / first name
Mr. Klaus Bott



Managing Director
Afag GmbH

2 Safety instructions



2.1 Explanation of symbols and notes


Symbols: Assembly and commissioning must be carried out by qualified personnel only and according to these operating instructions.

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 an immediate threatening danger.</p> <p>Non-compliance with this information can result in death or serious personal injuries (invalidity).</p>

 WARNING	
	<p>Indicates a possible dangerous situation.</p> <p>Non-compliance with this information can result in death or serious personal injuries (invalidity).</p>

 CAUTION	
	<p>Indicates a possibly dangerous situation.</p> <p>Non-compliance with this information can result in damage to property or light to medium personal injuries.</p>

NOTE	
	<p>Indicates general notes, useful operator tips and operating recommendations which don't affect safety and health of the personnel.</p>

2.2 Basic safety information

Familiarity with these basic safety rules and regulations constitutes the fundamental prerequisite for safe handling and trouble-free operation of afag HLF linear feeders.

These operating instructions contain the most significant regulations for safe HLF operation. These operating instructions - and in particular the safety regulations - must be observed by anyone working on and with the HLF. The applicable on-site accident prevention rules and regulations must also be observed. These operating instructions must always be kept handy where the HLF is operated.


Operation of the hopper is only to be carried out by technically qualified personnel.

Qualified personnel are deemed to be persons who, by reason of their training, experience and instructions as well as their knowledge of the prevailing standards, regulations, accident prevention regulations and operational conditions, have been authorized by the people responsible for the safety of the system to perform the required activities, and who are capable of recognizing possible hazards and avoiding them (definition of qualified personnel as per IEC 364).


Any malfunctions that may have an adverse effect on the safety of any persons, the HLF or other material assets must be eliminated without delay.

The following instructions are not only intended to ensure the personal safety of the operators but also the operation of the products described and the devices connected to them:

2.2.1 Electrical hook up



NOTE	
	<ul style="list-style-type: none">▪ Disconnect the power supply prior to assembling or dismantling as well as when changing fuses or carrying out installation modifications.▪ Observe all current accident prevention and safety regulations applicable to particular cases of operation.▪ Check whether the rated voltage of the hopper coincides with the local power supply prior to putting into operation.▪ All E-Stops must remain effective for all modes of operation. Unlocking the E-Stops must not, under any circumstances, cause uncontrolled restarting of the hopper.▪ The electrical connections must be safeguarded!▪ Ground wires must be checked for proper function subsequent to assembly!▪ Hook-up is only to be carried out by authorized personnel.

2.2.2 Specific danger points


NOTE	
	<p>Afag HLF linear feeders are state-of-the-art equipment designed in compliance with the EU Machinery Directive and accepted safety regulations. Nevertheless, however, risks may arise from using this equipment that may endanger life and limb of user or third parties and cause interference with the HLF or other material assets.</p>

2.3 Intended use

The HLF is intended exclusively for the transporting and buffering of components and can also be used for component sorting. For maximum permissible dimensions and weights of add-on components, observe details in chapter 3.3 Table 1: Technical data, chapter 4 Assembly instructions and chapter 5 Operating instructions. Appropriate use also includes observation of all Notes in these operating instructions.

 WARNING	
	<p>The KLF may <u>not</u> be used:</p> <ul style="list-style-type: none"> a) in damply and wet area b) in temperature lower than 10°C or higher than 50°C c) in areas where readily flammable media are present d) in areas where readily explosive media are present e) in heavy polluted or dust- laden area f) in aggressive area (e.g. saliferous atmosphere)

None modification or reconstruction are allowed. The Tracks (in the chapter 5.1 Feeder track design and in the chapter 4.3 Mounting of the useful mass) as well as the accessories (chapter 7) are excluded from this arrangement.

NOTE	
	<p>Any use other than that described above is deemed to be improper and will cause the warranty to terminate.</p>

Also refer here to our general terms and conditions of sale.

3 Description of the device

3.1 General

Afag Type HLF-M Linear Feeders are used to remove parts from upstream machines and/or feed parts to downstream machines. Afag Linear Feeders are also used for sorting parts, with due consideration of various criteria. Linear feeders are fitted in individual feeding units as well as in complex assembly systems.

The different types of Linear Feeders vary in size and application (see Table 1: Technical data)

NOTE



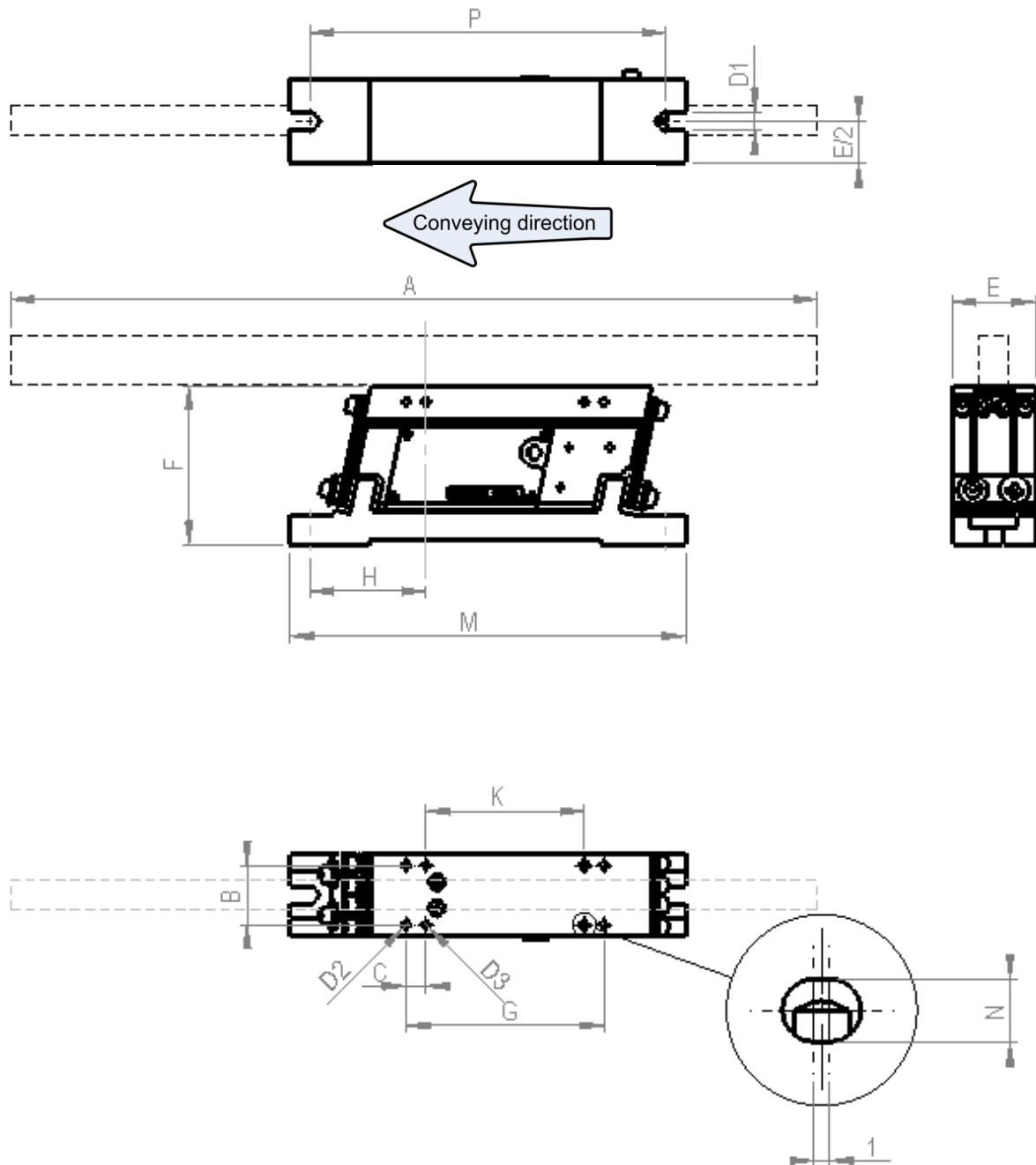
HLF feeders are to be operated in conjunction with an Afag control unit. This is the only combination that will guarantee perfect transport characteristics.

3.2 Functional description

HLF-M devices consist of two oscillating parts arranged on top of each other which oscillate asynchronously. Slotted leaf springs connect these to a common base plate at which the opposing oscillating forces virtually cancel each other out. The oscillating part on top is used as a structure (working weight) for attaching the feeder track. The lower oscillating part is the counterweight. A magnetic system (magnet armature – magnet core) is fitted horizontally between the two oscillating parts. The positive features of the HLF-M Linear Feeder are based on the balance of the working weight and the counterweight, eliminating the majority of free oscillating forces directly in the machine.

3.3 Technical data

Figure 1: Dimensions HLF



Ⓢ = centre of gravity of useful mass

Table 1: Technical data

Description		Units	HLF07-M	HLF12-M	HLF25-M
Dimension	A	[mm]	400	500	600
	B	[mm]	25	30	38
	C	[mm]	10	10	10
	D1	[mm]	7	9	9
	D2	[mm]	4 x M5	4 x M5	4 x M6
	D3	[mm]	2 x 4 ^{H7}	2 x 4 ^{H7}	2 x 5 ^{H7}
	E	[mm]	36	42	50
	F	[mm]	73	80	108
	G	[mm]	80	100	120
	H	[mm]	50	59	86,5
	K	[mm]	60	80	100
	M	[mm]	170	200	260
	N	[mm]	2 x 4 ^{H7}	2 x 4 ^{H7}	2 x 5 ^{H7}
	P	[mm]	150	180	240
Ideal track weight		[kg]	0,7 ± 0,05	1,2 ± 0,05	2,5 ± 0,1
Max. track weight		[kg]	0,9	1,5	3,0
Weight of basic device		[kg]	1,8	3,0	6,3
Mech. osc. frequency		[Hz]	Double supply frequency		
Power supply		[V/Hz]	230/50 or 115/60		
Max. power consumption		[VA]	15	19	100
Degree of protection		-	IP 54		
Control device (not in scope of delivery)		-	IRG and SE		
Temperature range for operation		[C°]	-10 to +45		
Noise emission: Continuous noise pressure level (without transported material)		[dB]	<70		
Measuring height/measuring distance		[m]	1,6/1		
Measurement direction with respect to the noise source		[°]	90		
Measurement method		-	A-evaluation		



Various sizes are available (see Table 1: Technical data) depending on the area of application and available space. The main criterion is the working weight (track length) and the space available for installation.



Two Afag Linear Feeder versions are available: 230V/50Hz and 115V/60Hz.

Various Afag control devices (see chapter 7.3 Control device) are available for controlling the Linear Feeder.

4 Assembly instructions

4.1 Transport

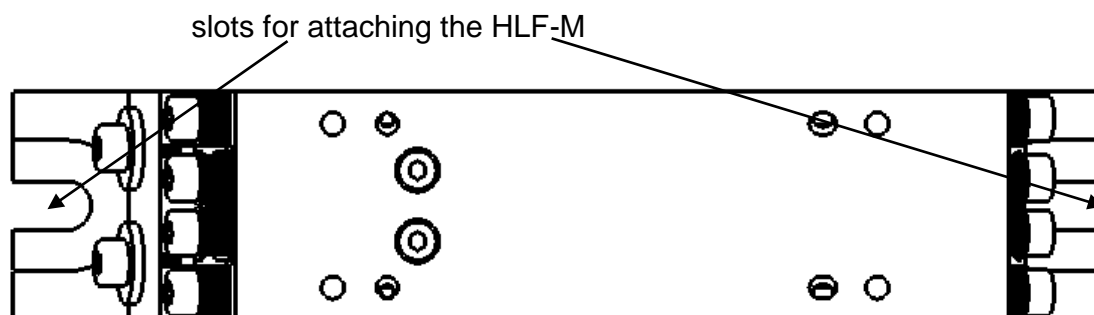
 WARNING	
	<p>Improper use of transport means (industrial trucks, cranes, technical aids, sling gear etc.) may lead to bruises and other injuries.</p> <p>Required behaviour:</p> <ul style="list-style-type: none"> ▪ Observe and follow the transport and maintenance instructions ▪ Proper use of transport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

 CAUTION	
	<p>During transport, the linear feeder must only be held by the base. The linear track is no lifting point.</p>

4.2 Installing the unit

The HLF-M is firmly screwed to the foundation structure by means of slots provided in the base plate (see Figure 2). This precisely defines the interfaces where the feeder track enters and exits as well as allowing adjustment. The substructure should be non-oscillating in a horizontal plane in order to be able to take up any residual forces. Self-supporting profile constructions have to be reinforced with a base plate to which the Linear Feeder is attached. A steel plate of at least 20mm thickness and a width of over 120mm should be used for this purpose. The vertical oscillating forces responsible for energy induction in the foundation structure should be virtually completely eliminated by a careful balance of weights (see chapter 5.2 Balance of weights). Height adjustments can be achieved by means of appropriate substructures. Standard Afag components are available for setting up complete units.

Figure 2: Attachment slots in the base plate



4.3 Mounting of the useful mass

4.3.1 General

The HLF-M Linear Feeder is based on a balance of the oscillating forces by the principle of opposing oscillation (push-pull). In order to ensure an effective balance of oscillating forces, it is necessary to keep the lines of action of the centres of gravity of the working weight and counterweight as close together as possible. The position of the centre of gravity of the counterweight is determined by the Linear Feeder design. The centre of gravity of the working weight is determined by the construction design specified for the working weight (e.g. feeder track). In order to ensure a good balance of oscillating forces with minimum residual oscillation, the overall centre of gravity of the working weight has to be located within the area specified in Table 2: Limiting coordinates for the position of the centre of gravity of the working weight.

Figure 3: Centre of gravity range

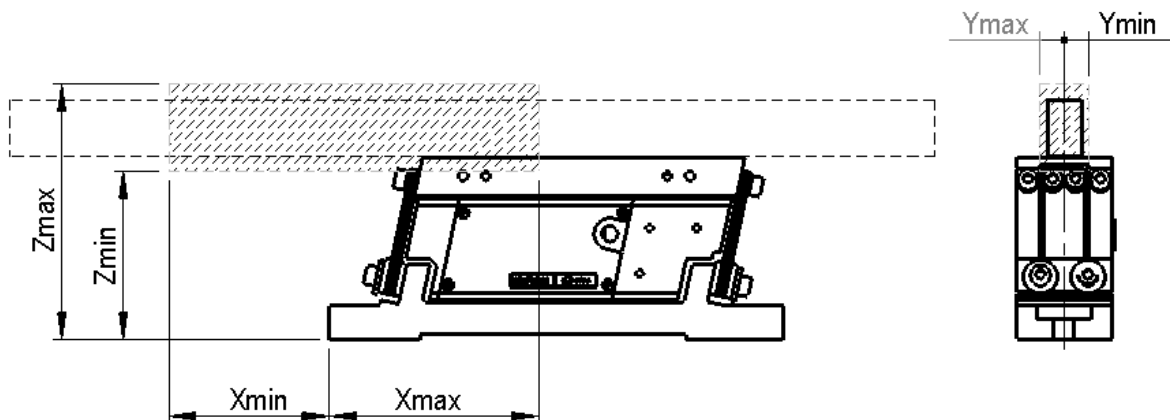


Table 2: Limiting coordinates for the position of the centre of gravity of the working weight

		HLF07-M	HLF12-M	HLF25-M
Dimension [mm]	X_{\min} / X_{\max}	-90 / +70	-100 / +80	-105 / +105
Dimension [mm]	Y_{\min} / Y_{\max}	-9 / +9	-10 / +10	- 12 / +12
Dimension [mm]	Z_{\min} / Z_{\max}	+69 / +86	+73 / +95	+95 / +125

4.3.2 Mounting a linear track

The feeder track is attached by means of a side plate (see Figure 4). The side plate is fixed precisely and reproducibly using fitting pins. Vertical slits in the side plate are provided for feeder track attachment, allowing fine adjustment of the track entry and exit interfaces in a vertical direction.

Figure 4: Attachment using a side plate O

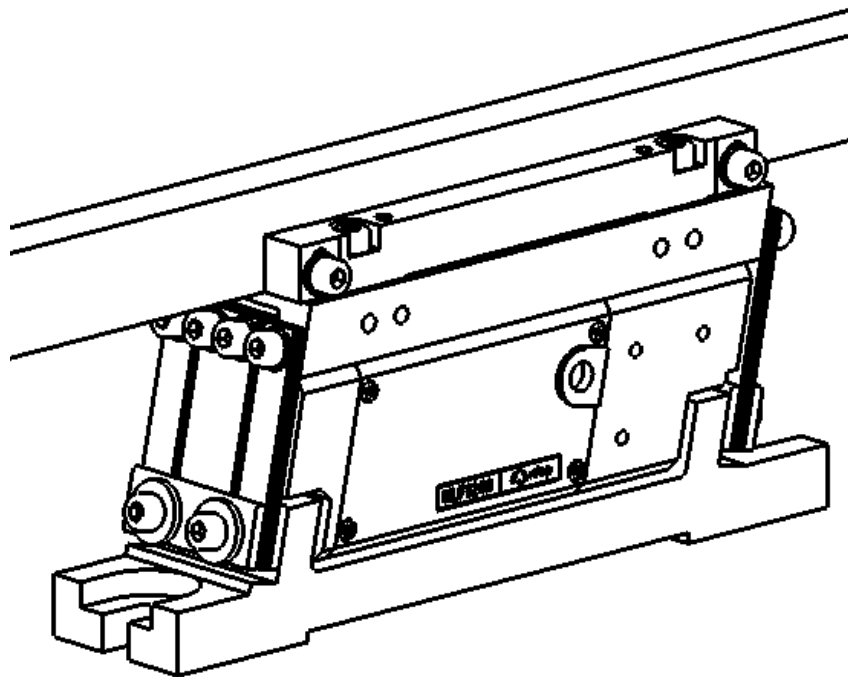
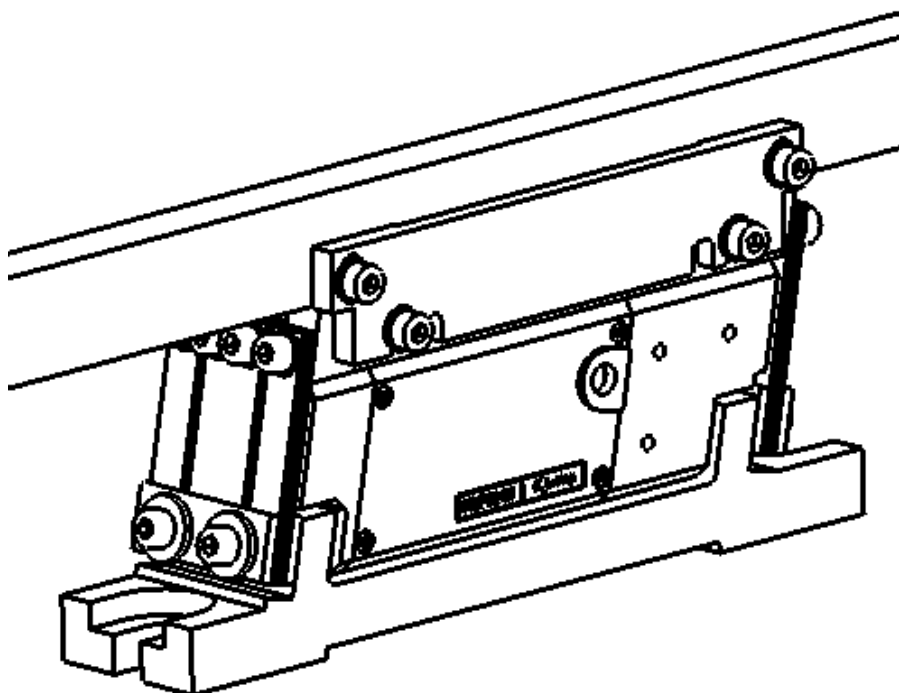


Figure 5: Attachment using a side plate S





HINWEIS



The useful mass has to correspond to the values specified in chapter 5.2 Balance of weights.

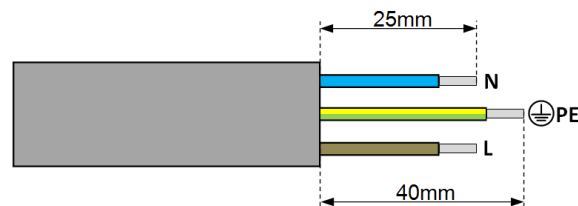
4.4 Power supply

 WARNUNG	
	<ul style="list-style-type: none"> ▪ 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 linear feeder may only be operated with the power supply specified on the name plate.

The control devices IRG 1-N or IRG 2-N are used for the activation of the linear feeder. The SE 601 or SE 602 can also be used. Please note that an additional CEE connector plug is required for the SE controllers (Order number: 11006982)

Installation of the plug is only to be carried out by technically qualified personnel according to Figure 6: End of the wire for additional plug.

Figure 6: End of the wire for additional plug



5 Operating instructions

The first step in adjusting the linear feeders is always to balance the masses and then to adjust the natural frequency.

5.1 Feeder track design

The linear tracks must be unyielding so that the transport pulses generated by the unit are fully transferred to the work pieces and no superimposed natural vibration can adversely affect the transport process. This requirement has priority over mass reduction measures. The preferred material for linear tracks is tool steel (e.g. 1.2842, 90MnCrV8). Linear track design should adhere to the useful masses specified in chapter 3 Table 1: Technical data and Table 4: Obligatory values for the working weight

The following size ratio should be aimed for with regard to the feeder track cross-section:

————— —

The recommended dimensions are listed in Table 3: *Linear track dimensions*. The dimensions are for one vibrating section and can be applied to each of the two vibrating sections.

Table 3: *Linear track dimensions*

	HLF07	HLF12	HLF25
Length [mm]	300	400	600
Breath [mm]	17	17	24

5.2 Balance of weights

The oscillating forces in the base plate of the Afag Linear Feeder are compensated almost completely due to the principle of opposing oscillations (push-pull). This balance of oscillating forces is however only achieved if:

1. The working weight and the counterweight are balanced as closely as possible. This means that the working weight and the counterweight are equal. The working weights specified for respective sizes are listed in Table 4 below. The working weight is the total weight of all components attached to the mounting plate including the side plate. The balance of weight is verified by simply weighing the working weight.
2. The centre of gravity of the working weight is located in the range represented in Figure 3.

Both conditions have to be taken into consideration at the construction stage of the feeder track. An optimal balance of weight is achieved when almost no residual vibrations can be detected in the substructure.

Table 4: Obligatory values for the working weight

Type	Ideal useful mass [kg]	Max. useful mass [kg]
HLF07-M	0,7 ± 0,05	0,9
HLF12-M	1,2 ± 0,05	1,5
HLF25-M	2,5 ± 0,1	3,0

NOTE



Useful and counter masses should correspond to the values specified in Table 4.

NOTE

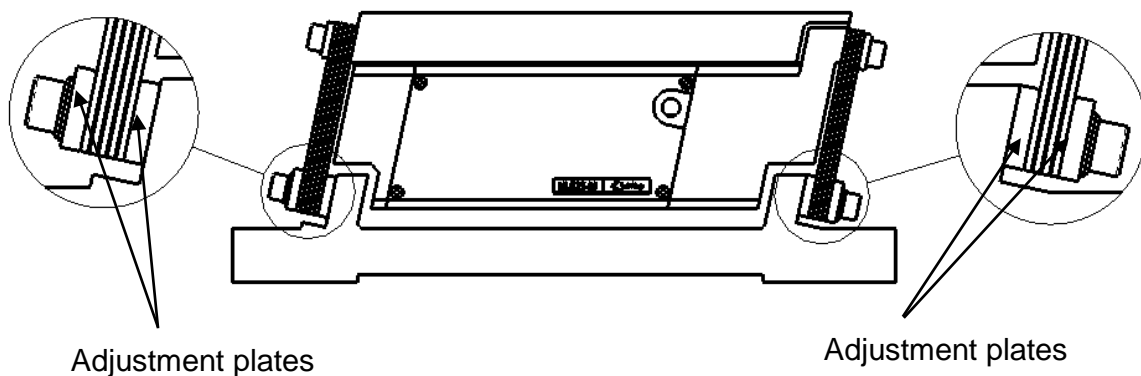


1. Masses are fully balanced if hardly any vibrations are noticeable in the floor.
2. When masses are fully balanced, the transport speeds at useful and counter sides are identical.

5.3 Fine adjustment of natural frequency

The Afag Linear Feeder is a spring/weight based vibrating system that operates by making use of resonance. Weights that are not exactly balanced require a spring stiffness modification. Movable adjustment plates are provided at the base plate attachment of the spring assemblies (see Figure 7). The natural frequency can be adjusted by moving these adjustment plates.

Figure 7: Spring assembly with adjustment plates



The Linear Feeder always has to be adjusted 'subcritically', i.e. the inducing frequency has to be about 5% less than the natural frequency. This means that a natural frequency of about 103Hz is required for a 100Hz feeder, and a natural frequency of about 124Hz is required for a 120Hz feeder.

Adjustment should be carried out as follows:

Put a test part on the feeding track and switch on the control device. Use the turning knob to reduce the feed rate of the Linear Feeder until the part on the feeder track is only moving slowly. Maintain the control device setting and slowly unscrew the adjustment plate screws of a spring assembly of the Linear Feeder (see Fig 5). Check the feed rate of the test part while loosening the screws. If the feed rate first increases briefly and then starts to decrease on further loosening the screw, the Linear Feeder is not adjusted properly, with the natural frequency slightly above the inducing frequency. The adjusting plates have to be reset to the position they were in before loosening the screws.

If the feed rate increases when the screws are loosened and does not or only minimally decrease when fully unscrewed, the Linear Feeder adjustment is too stiff, i.e. the natural frequency is still too high. The adjustment plates have to be pushed downwards or, if the weight difference is significant, a leaf spring may have to be removed. The test has to be repeated afterwards.

If the feed rate decreases immediately on loosening the screws, the Linear Feeder adjustment is too soft. The adjustment plates then have to be pushed upwards or if necessary, an additional leaf spring has to be fitted. The test has to be repeated afterwards.

When moving the adjustment plates, it should be kept in mind that the adjustment plates always have to be horizontal and exactly opposite to each other.

Adjustment plates up ⇒ Natural frequency increases

Adjustment plates down ⇒ Natural frequency decreases

⚠ CAUTION



It is vital that the linear feeders be 'subcritically' adjusted (i.e. the natural frequency must be about 5% above the exciter frequency) as otherwise the magnet may overheat and burn out, and the transport speed may decrease as soon as components are placed upon the linear track.

To avoid the vibrating sections from subsiding, make sure to loosen the adjustment plates of one spring assembly only at a time during frequency setting.

NOTE

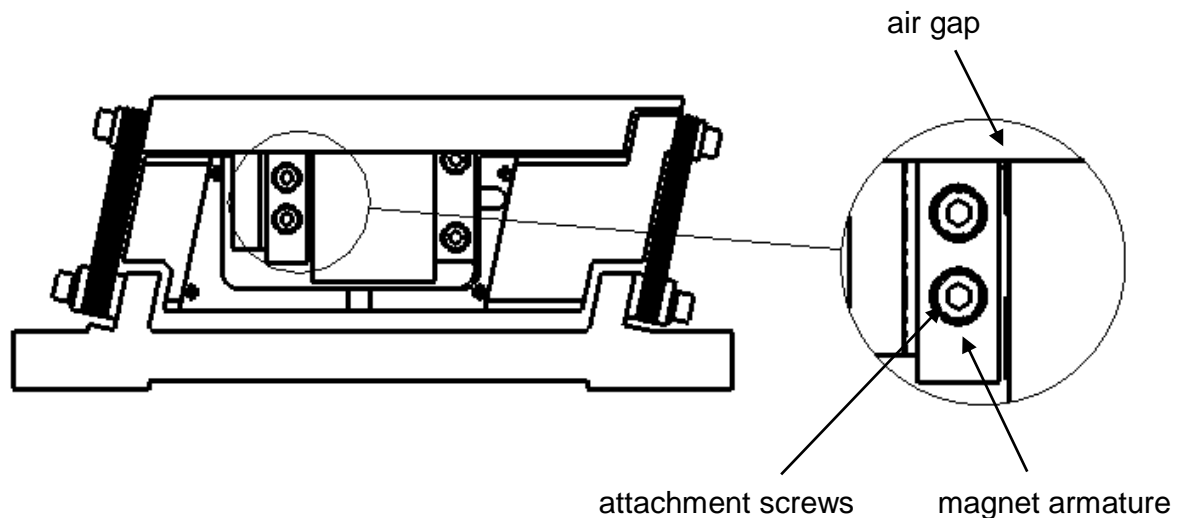


The adjustment plates must be aligned horizontally. The top edges must always be arranged opposite each other.

5.4 Setting the air gap

During series assembly, the air gap of the magnet system is set to the values specified in Table 5. If this air gap deviates from the values specified in Table 5, e.g. after a natural frequency adjustment, then this has to be reset. The cover is removed for this purpose, and the side attachment screws of the armature are unscrewed and the air gap is readjusted using a distance gauge (Table 9).


Figure 8: Armature attachment




The values specified in Table 5 are only applicable for the respective power supply. When making adjustments, it is imperative that the surfaces of the magnet core and armature are exactly parallel to each other. To achieve the required precision, it is necessary to tighten the screws alternately and in stages.

Table 5: Settings for the air gap between armature and magnet core

Type	Power supply	Air gap value [mm]	Tolerance
HLF07	230V/50Hz	1,0	± 0,05
	115V/60Hz	1,0	± 0,05
HLF12	230V/50Hz	1,0	± 0,05
	115V/60Hz	1,0	± 0,05
HLF25	230V/50Hz	1,1	± 0,05
	115V/60Hz	1,1	± 0,05



 **CAUTION**



Setting an air gap larger than specified may cause the magnet to overheat and the coil to burn out. It is therefore vital that the specified air gaps be adhered to.

6 Maintenance

A Linear Feeder Type HLF-M is generally maintenance free. Under certain conditions, an oxidation layer may however be formed at the contact surfaces of the leaf springs and spacer discs, which may have a negative influence on oscillation over a period of time. Such cases may necessitate dismantling and cleaning the leaf springs, or replacing them. The two oscillating parts have to be supported vertically during such a procedure. Only one spring assembly may be removed at a time, since the oscillating parts will be displaced otherwise, and proper function is then no longer guaranteed.

 CAUTION	
	The leaf springs must not be oiled or greased as this would make the springs sticky and in turn adversely affect the vibration response.

6.1 Troubleshooting

Conveyor does not run, there is no vibration detectable	
Cause of fault	Fault repair
Supply voltage too low or instable, e.g. only 180 V	Check the supply voltage, readjust the conveyor to the existing supply voltage, if necessary
Connection to the power supply interrupted	Check the connection between drive control unit and control mains adapter
Control unit is switched off <0>	Switch on the control unit <1> or check the jam control signal if a jam control is used
Control unit is defective	Electrical check of the device, use an exchange or a replacement unit
The magnet is damaged, the field winding has burnt out	Electrical check of the magnet, replace damaged magnet. Check settings: 50 Hz position, full wave (exciting frequency = 100 Hz)
The air gap between magnet and rotor is too small (striking) or too large	Set the air gap according to the operating manual
Foreign part jammed in the air gap between magnet and rotor	Remove foreign part
Conveyor runs too slowly, there is no movement recognisable	
Cause of fault	Fault repair
Supply voltage too low or instable, e.g. only 180 V	Check the supply voltage, readjust the conveyor to the existing supply voltage, if necessary
Output frequency of the control unit is set improperly	Set the switch in the control unit according to the required frequency: 50 Hz position, full wave (exciting frequency = 100 Hz)

The conveyor rail is not sufficiently fastened to the corresponding drive	Tighten fastening screws, check thread, if necessary
The magnet is damaged, the field winding has burnt out	Electrical check of the magnet, replace damaged magnet. Check settings: 50 Hz position, full wave (exciting frequency = 100 Hz)
The air gap between magnet and rotor is too small (striking) or too large	Set the air gap according to the operating manual
Change of the system's natural frequency due to a broken spring	Undo screws of the spring assemblies, check springs, and replace broken or damaged springs. CAUTION! Cause for a broken spring is often too high oscillation amplitude. --> Check air gap
The drive is improperly adjusted, i.e. the system's natural frequency does not match the exciting frequency	Adjust the drive by changing the spring stiffness: Change the position of the adjustment plates. Tighten the screws of the spring assemblies. CAUTION! Adjust the conveyors according to the operating manual!
The weight (moment of inertia) of the conveyor bowl exceeds the maximum permissible limit value for the corresponding drive	Carry out a mass balance according to the instructions in the operating manual
Foreign part jammed in the air gap between magnet and rotor	Remove foreign part
The conveying behaviour is instable, the conveyor speed varies	
Cause of fault	Fault repair
Supply voltage too low or instable, e.g. only 180 V	Check the supply voltage, readjust the conveyor to the existing supply voltage, if necessary
Output frequency of the control unit is set improperly	Set the switch in the control unit according to the required frequency: 50 Hz position, full wave (exciting frequency = 100 Hz)
The conveyor rail is not sufficiently fastened to the corresponding drive	Tighten fastening screws, check thread, if necessary
The magnet is damaged, the field winding has burnt out	Electrical check of the magnet, replace damaged magnet. Check settings: 50 Hz position, full wave (exciting frequency = 100 Hz)
Change of the system's natural frequency due to a broken spring	Undo screws of the spring assemblies, check springs, and replace broken or damaged springs. CAUTION! Cause for a broken spring is often too high oscillation amplitude. --> Check air gap
The drive is improperly adjusted, i.e. the system's natural frequency does not match the exciting frequency	Adjust the drive by changing the spring stiffness: Change the position of the adjustment plates. Tighten the screws of the spring assemblies. CAUTION! Adjust the conveyors according to the operating manual!
The weight (moment of inertia) of the conveyor bowl exceeds the maximum permissible limit value for the corresponding drive	Carry out a mass balance according to the instructions in the operating manual
Foreign part jammed in the air gap between magnet and rotor	Remove foreign part

The conveyor transmit vibrations	
Cause of fault	Fault repair
The conveyor rail is not sufficiently fastened to the corresponding drive	Tighten fastening screws, check thread, if necessary
Change of the system's natural frequency due to a broken spring	Undo screws of the spring assemblies, check springs, and replace broken or damaged springs. CAUTION! Cause for a broken spring is often too high oscillation amplitude. --> Check air gap
The drive is improperly adjusted, i.e. the system's natural frequency does not match the exciting frequency	Adjust the drive by changing the spring stiffness: Change the position of the adjustment plates. Tighten the screws of the spring assemblies. CAUTION! Adjust the conveyors according to the operating manual!
The weight (moment of inertia) of the conveyor bowl exceeds the maximum permissible limit value for the corresponding drive	Carry out a mass balance according to the instructions in the operating manual
Conveyor rail lifts off or hits	
Cause of fault	Fault repair
The conveyor rail is not sufficiently fastened to the corresponding drive	Tighten fastening screws, check thread, if necessary
The air gap between magnet and rotor is too small (striking) or too large	Set the air gap according to the operating manual
Foreign part jammed in the air gap between magnet and rotor	Remove foreign part
Change of the system's natural frequency due to a broken spring	Undo screws of the spring assemblies, check springs, and replace broken or damaged springs. CAUTION! Cause for a broken spring is often too high oscillation amplitude. --> Check air gap
The drive is improperly adjusted, i.e. the system's natural frequency does not match the exciting frequency	Adjust the drive by changing the spring stiffness: Change the position of the adjustment plates. Tighten the screws of the spring assemblies. CAUTION! Adjust the conveyors according to the operating manual!

6.2 Wear parts and spare parts

Table 6: *Wear parts*

Type	Designation	Order number
HLF07	Leaf spring	50203877
HLF12	Leaf spring	50203471
HLF25	Leaf spring	50254134

Table 7: *Spare parts*

Type	Designation	Power supply	Order number
HLF07	Magnet	230V/50Hz	15054450
		115V/60Hz	15002283
HLF12	Magnet	230V/50Hz	50277472
		115V/60Hz	50277904
HLF25	Magnet	230V/50Hz	50270048
		115V/60Hz	50280087

7 Accessories

7.1 Mounting parts

Table 8: *Order data*

Type	Designation	Remark	Order number
HLF07	Trimming weight NM07	mass: 25g	50217298
	Trimming weight GM07	mass: 15g	50216944
	Side plate O-07	-	50197283
	Side plate S-07	-	50217291
HLF12	Trimming weight NM12	mass: 50g	50216719
	Trimming weight GM12	mass: 25g	50216708
	Side plate O-12	-	50197284
	Side plate S-15	-	50216714
HLF25	Trimming weight NM25	mass: 100g	50217316
	Trimming weight GM25	mass: 50g	50217312
	Side plate O-25	-	50197285
	Side plate S-25	-	50217314

7.2 Adjustment aids

Table 9: *Distance gauge*

Designation	Drive type	Order number
Distance gauge	HLF07-M	50185560
	HLF12-M	50185560
	HLF25-M	50273499

7.3 Control device

The HLF is connected to the 230V/50Hz AC system via an IRG or SE controller and can be rated for other mains voltages and frequencies, e.g. 115V/60Hz. They operate in full-wave mode at double mains frequency, i.e. at 50Hz AC, with a vibration frequency of 100 Hz, in half-wave mode at single mains frequency with a vibration frequency of 50 Hz.

Vibration displacement and thus the transport speeds are infinitely adjustable due to magnet current and thus magnetic force variability.

Soft-starting, all IRG and SE types can be mounted in various different ways and offer extra controls for photoelectric barriers, initiator elements, or extern 24VDC signal. For a detailed description of the controllers refer full-range catalogue from AFAG GmbH.

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

Table 10: *Controllers for HLF- Linear feeder*

Type	Power supply	Order number	Comments
IRG1-N	230 V / 50 Hz	15083186	Control with no timer function
	115 V / 60 Hz	15171112	
IRG2-N	230 V / 50 Hz	15204235	Control with timer function using sensors
	115 V / 60 Hz	15182634	
SE 601	230 V / 50 Hz	11015601	With timer function, valve and interface outputs, sensor feed
	115 V / 60 Hz	50018668	
SE 602	230 V / 50 Hz	11015602	With sensor feed
	115 V / 60 Hz	50018674	

7.4 Ordering address

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8 Disposal

HLF feeders that are no longer in use should not be disposed of as complete units but dismantled into separate materials and recycled. Non-recyclable components must be disposed of correctly.