

Assembly and Operating Instructions

Vibratory conveyor drive

1. **Application**
2. **Technical data**
3. **Installation**
4. **Terminal diagram**
5. **Initial operation**
6. **Operational check**
7. **Trouble-shooting**
8. **Altering the balance**
9. **Spare parts**

Safety instructions for the user

These instructions contain all the information required for proper use of the product described. They are intended for use by technically qualified personnel.

Danger !

Dangerously high voltages! Disregard of this danger can lead to death, severe bodily injury or damage to machinery.

- Disconnect the electricity supply at the mains before undergoing assembly or disassembly work or when replacing fuses and altering construction of the system.
- The appropriate accident prevention and safety guidelines for each specific area of utilisation must be adhered to!
- Ensure before switching on the machine that the appliance supply voltage is the same as the local voltage supply.

subject to alterations

1. Application

Electromagnetic vibratory conveyor drive for vibratory appliances such as part bins and vibratory conveyor sections.

The vibratory conveyor drive must be used in connection with a suitable control unit.

No liability is accepted for any injury or damage to persons or machinery when used for other applications or with other operating methods.

2. Technical data

Appliance

		Antrieb 13	Antrieb 20	Antrieb 30	Antrieb 40	Antrieb 45	Antrieb 55
Electrical Data							
Current consumption	A	0,34	0,63	1,25	2,73	2,26	4,52
Nominal apparent output	VA	78,2	144,9	287,5	627,9	519,8	1039,6
Protective system	IP	54	54	54	54	54	54
Oscillation frequency	Hz	100	100	100	100	50	50
Maximum working weight	kg	1,5	5	12	20	20	30
Weight without conveyor rail	kg	5,3	10,8	23,5	55	90	100

Other voltages and frequencies are available as special versions. Values given in the table above are modified accordingly.

3. Installation

The vibratory conveyor drive must be constructed so that it remains stable during vibration.

If a steel plate is to be used as a base it must be at least 8 mm thick for ANTRIEB 13 and ANTRIEB 20, 15 mm for ANTRIEB 30, ANTRIEB 40, ANTRIEB 45 and ANTRIEB 55. This plate must also be attached to the ground so that it is stable during vibration.

The vibratory conveyor drive is screwed onto the threads of the rubber buffers on the base plate.

Adjacent machine components, especially electric leads and pneumatic pipes should on no account come into contact with the vibratory conveyor.

4. Initial operation

The vibratory conveyor drive must be connected to the control unit as illustrated in the terminal plan and connected to the mains.

The conveyor rail on the vibratory conveyor drive must not be loaded.

Turn on the vibratory conveyor drive at the mains switch on the control unit. Turn the set-point potentiometer on the control unit from 0% to 100%.

There should be no perceptible noise except humming, which will be louder or quieter depending on the setting of the potentiometer.

Harsh, rattling or hammering noises are always an indication of faults in the appliance, which must be repaired.

5. Operational check

Adjust the set-point potentiometer on the control unit to approx. 50%.

If necessary turn up the set-point potentiometer.

The vibratory conveyors are tuned during their final inspection at the factory so that they reach the agreed conveying capacity when the set-point potentiometer is positioned between 50 and 80%.

The set-point potentiometer should not be turned up higher than absolutely necessary during operation.

Too high a vibration amplitude of the vibratory conveyor drive can impair the conveying capacity and creates unnecessarily loud noises.

When the machine has been newly installed, it should be observed for about 15 minutes to ensure that it is functioning properly.

Any damage resulting from transportation or improper use can be recognised in this way, and repaired before the machine is used in production.

6. Trouble-shooting

6.1 General information

The vibratory drive is resistant to wear and is maintenance-free.

The electronic control unit is also resistant to wear and maintenance-free.

The conveyor rail may show signs of wear after a prolonged use, depending on the version and material conveyed.

6.2 The vibratory conveyor drive does not function at all

If the vibratory conveyor drive stops completely, the control unit must first be examined by a qualified electrician:

- electricity supply, - switches, - fuses, - connection leads - connection to the vibratory conveyor.

If no faults are found in the areas mentioned above, the vibratory conveyor drive can be connected briefly to the mains. A suitable diode must be used for connecting ANTRIEB 45 and ANTRIEB 55. The diode must have a sufficient current-carrying capacity and be voltage-stable. For further information see Chapter 2: Technical Data.

If the vibratory drive still does not vibrate, check the vibration magnet(s).

To check the vibration magnets remove the protective cover on the vibratory drive and hold a strip of steel (not non-magnetizable special steel) near to the magnet air-gap. If the vibration magnet is intact, a vibration of the sheet-steel strip can be felt.

It is most unlikely that complete failure will be due to mechanical components, since breakage of the leaf springs and screws is almost impossible.

6.3 Reduced conveying capacity

There are many possible causes for reduced conveying capacity, which can often only be discovered by careful observation.

If you do not have any suitable experts available for this work, we recommend that you deliver the entire vibratory conveyor back to our factory. Please confirm this with us beforehand.

Possible causes of reduced conveying capacity:

1. Variation in dimension or geometry of the material conveyed

The cause of failure is often differences in dimension or geometry of the material conveyed from that of the components used when setting up the machine. For example, these differences may be burrs or sprues on injection molded parts.

2. Oscillation amplitude of the vibratory conveyor drive is too high

3. Oscillation amplitude of the vibratory conveyor drive is too low

4. Greased or oiled materials

The vibratory conveyor works on the principle of friction being created between the conveyor rail and the material conveyed.

With greased or oiled materials, the friction may be reduced so greatly that transportation comes to a halt.

This sort of problem can be solved immediately by degreasing the conveyor rail and the material being transported.

7. Altering the balance

The oscillation amplitude of the spring/mass system can be altered by altering the system's balance. There are two ways of doing this:

7.1 Modifying the masses

The masses are on one hand the lower part of the vibratory conveyor drive and on the other hand the upper part of the vibratory conveyor drive plus the mass of the conveyor rail plus part of the load. The user can only make very minor adjustments in this area. Because of this, the subject will not be entered into in any further detail here.

7.2 Modifying the spring constants

Please note: the numbers in brackets refer to the illustrations and the spare parts list in Chapter 8: Spare Parts

7.2.1 Checking / adjusting the magnet air-gap

Check the magnet air-gap(s) with a feeler gauge and if necessary readjust using the table below for reference.

ANTRIEB	13	20	30	40	45	55
Nominal air gap (mm)	0,3 - 0,4	0,4	0,4 - 0,5	0,8 - 1,2	0,9 - 1,1	0,7 - 0,9

ANTRIEB 13, 20, 30, 45

- Undo screws , by which the electromagnet armature is fastened, and detach the electromagnet armature
- Correctly adjust the gap according to the above table by adding or removing adjusting rings.
- Remount the electromagnet armature, firmly tighten the screws.

ANTRIEB 40

- Undo the fastening screws of the electromagnet armature and the support.
- Adjust the air gap according to the above table by moving the electromagnet armature and the support.
- Note: the electromagnet armature and the magnet yoke must be aligned exactly parallel to each other.
- Tighten the fastening screws again.

ANTRIEB 55

- Undo the adjusting nuts of the set screws and unscrew them a little.
- Undo the fastening screws of the magnet.
- With the set screws, adjust the air gap between magnet and electromagnet armature in accordance with the above table.
- Firmly tighten the fastening screws again.

- Lightly re-tighten the set screws (to slight tension).
- Tighten adjusting nuts again.

7.2.2 Checking the spring pack screws

Ensure that the spring pack screws are fully tightened.

7.2.3 Modifying the spring constants

- Switch the vibratory conveyor on at the control unit and adjust to a slow conveyor speed with the control knob on the control unit.
- Carefully loosen the lower fastening screw on any spring pack, observing any alteration in conveyor speed.
If the speed increases, a spring must be removed. If the speed decreases, a spring must be added.

When adding or removing springs, ensure that:

- * All the spring packs contain equal quantities of springs as far as possible.
In other words, the springs may only be removed from spring packs which have more or the same amount of springs as the other spring packs.
This also means that springs may only be added to spring packs which have fewer or the same amount of springs as the other spring packs.
- * Separators (100) must always be mounted between two springs (80/90) (one above and one below) to prevent the springs rubbing together.
- * Clamping plates (Pos. 110) must be mounted on both the outer and inner sides of the spring pack, one at the top and one at the bottom (see illustration).
- * The magnet air-gap should be checked every time a spring is changed.

The spring constant is correctly adjusted if the required conveying speed is achieved when the adjusting knob is set between 50 and 80%.

7.2.4 Checking the screws are tightened

Check once more that all the screws are properly tightened.

8. Spare Parts

Ersatzteile / Spare parts / Pièces détachées

ANTRIEBE 13, 20, 30, 45

Pos. Nr.	Teilebezeichnung	Partspecification	Dénomination
10	Grundplatte	Base plate	Plaque de base
20	Aufnahme	Holder	Logement
50	Blattfeder	Leaf spring	Ressort à lame
60	Spannplatte	Clamping plate	Plaque de montage
70	Trennstück	Separator	Séparateur
80	Abdeckhaube	Hood	Capot
100	Schwingmagnet	Vip. Magnet	Aimant vibrant
105	Magnetanker	El. mag. arm.	Armature électro-aimant
110	Gummipuffer	Rubber buffer	Tampon en caoutchouc
150	Anschlußkabel	Power cable	câble de raccordement
160	Klemmenkasten	Terminal box	Boîte de connexions
180	Auflage	Support	Appui
250	Platte	Plate	Plaque

