

Operating instructions
for vibrating conveyor
and vibrating screen
with unbalance drive

Mounting and operating instructions for vibrating equipment with unbalance drive

A Mounting of the equipment

Chapter survey

In this chapter we describe, how to erect a newly supplied vibrating conveyor

A1 Scope of supply

The scope consists of:

- ✓ The conveyor with attached unbalance motors
- ✓ Mounting or suspension elements: (hollow) rubber buffers, springs + saucers, suspension springs, including bolts, nuts and washers needed for the erection.

Depending on the order, also of:

- ✓ The connection unit (braking device)
- ✓ Wiring diagram
- ✓ Suspension cables with accessories for the suspension springs



NOTE

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Please check on receipt, if the shipment is complete according to purchase order, packing list and/or outline drawing. In case of any discrepancy of the shipment, you must report this to AVITEQ (by telephone) by return.
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Lose parts will be packed for shipment separately. Parts that can move in relation to each other, will be secured before shipment. E.g. silo discharge combinations with vibrating conveyor, or helical conveyors with standing tube, or vibrating screens with moving counter mass. Transport safety device is marked with red paint.

A2 transport safety

Please remove the transport safety device only after the erection is completed! Preliminary removal can lead to damage. The vibrating apparatus however, must not be commissioned before the transport safety device is removed. Switch on with mounted safety clamps will also lead to damage!

A3 Mounting of the unbalance motors

If, e.g. while the vibrating equipment had to be treated, the unbalance motors have been removed, they have to be replaced according the instructions in Chapter 4 of the manual, after the erection of the machine is completed.

Please take special care for the contact surfaces of the foot mounting to be absolutely free of paint residue, oil, grease of grate etc. Please clean these surfaces first if necessary. The contact surfaces may have a roughness of 50µ max. and they must be in one plane $\pm 0,5\text{mm}$.

A4 Mounting of the vibrating equipment

The vibrating equipment must be placed on its support construction, or be suspended from it, according to the dimensional drawing, belonging to the scope of supply. After erection, the equipment must be able to move freely in all directions. At no occasion may the equipment rattle against stationary parts, not even at the largest possible working stroke. Please keep a safety clearance of 40 tot 50 mm in all directions as a guideline.

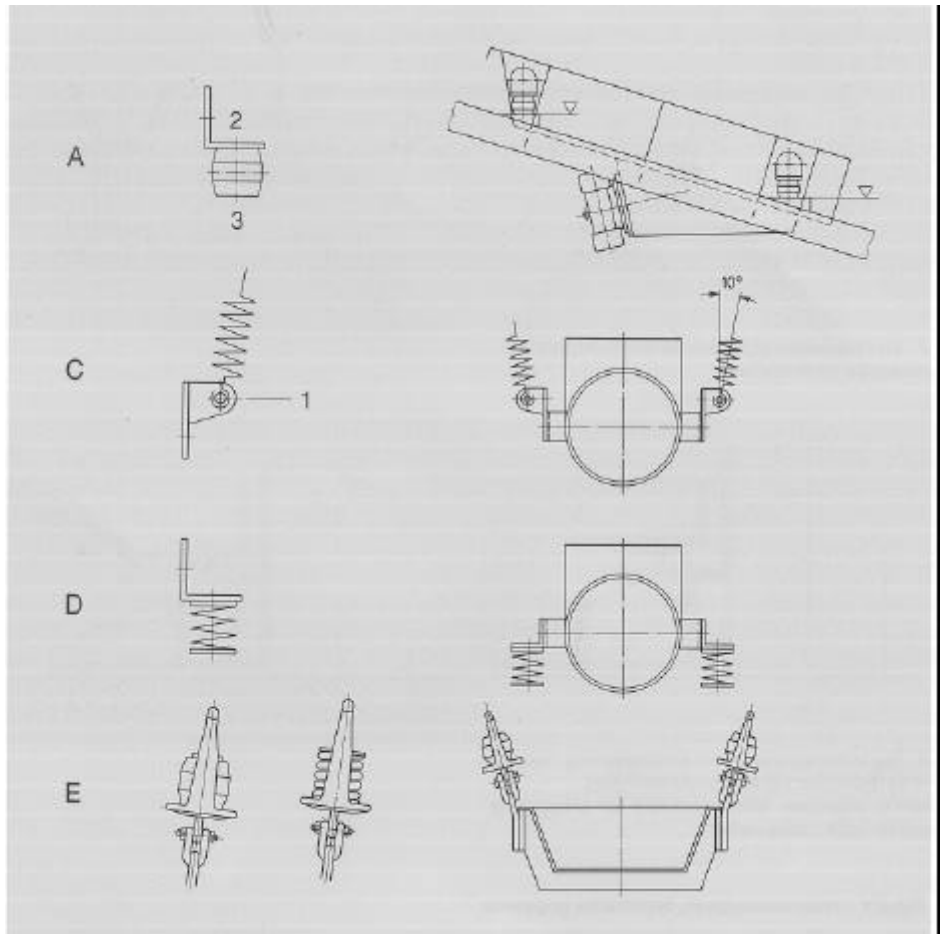


ATTENTION!

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Attention! If unbalance motors run out unbraked, large resonance strokes can occur! The safety clearance to stationary parts must be maintained at all times, to provide collision. If you don't keep this clearance, it might lead to damage!!
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While erecting vibrating equipment, please make sure, that the (hollow) rubber buffers or helical springs are always loaded vertically, even when the apparatus is built in with an upward or downward slope. If the isolating elements are loaded askew, they will wear rapidly and also will the support construction be subject to cross forces for which it wasn't designed. The mounting surfaces for isolating elements must at all time be horizontal!

In view 1 we show you some examples of mounting, resp. suspension of free-swinging equipment. The support construction must not only be designed for the static load of the vibrating equipment and bulk laying on it, but also for the dynamic load by the moving mass, transduced to the support construction via the isolating elements. This load, although little, can, since moving forces are involved, result in severe strokes, if the construction lacks stability. Please always furnish a stable and sturdy support construction when mounting vibrating equipment.



View 1

- A: support on (hollow) rubber buffers
- C: suspension from helical springs
- D: support on helical springs
- E: suspension from pressure loaded springs or buffers

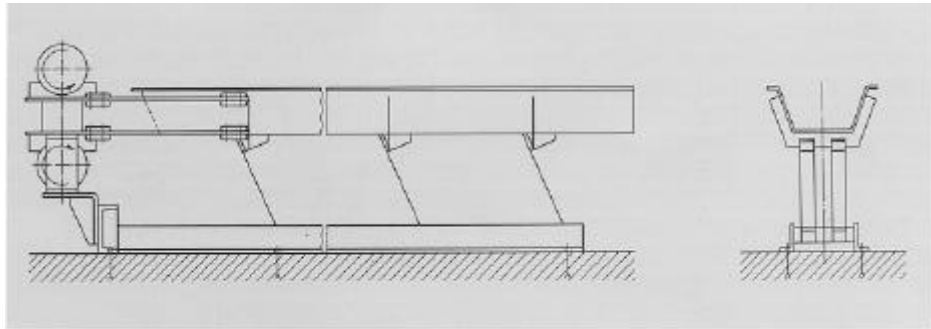
If vibrating equipment is to be suspended from helical springs using hanging cables, the spring must be hooked on to the support construction and the cable must be attached to the vibrating apparatus. In case very little mounting clearance is present, the spring can also be attached directly to the apparatus. The eye of the spring or cable that is attached to the vibrating apparatus, must be tightened firmly. Please regard the fastening torques in table 4.1! The springs or cables have to point 10 to 15° outward, to prevent sideward swinging.

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Attention! When you attach suspension springs, please take care, that the spring axis points in cable direction, to prevent bending strain causing damage.



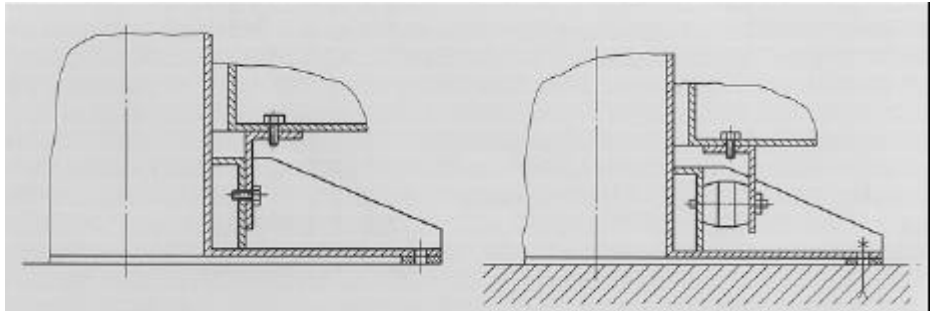
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Attention! When you mount vibrating equipment via suspension springs and/or cables, always furnish safety catches or lines!!!

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Attention! When you erect vibrating equipment, please use only the included isolating elements. Application of unsuitable elements can lead to damage on the equipment and support structure!



View 2: trough supported on leaf springs

In view 2 you see a vibrating conveyor supported on leaf springs. The conveyor's guide frame must be mounted on the foundation without torsion or strain. You will find the foundation weight you need, in the included dimensional drawing. If with this type of conveyor the guiding frame is executed as a counter swinging frame, all the contact surfaces for the support springs (mainly helical springs) must be in one plane to prevent torsion or strain.



View 3: helical conveyor with standing tube

Left: angle steel as transport safety

Right: angle steel turned 180° to allow attachment of a hollow rubber buffer

In view 3 you see, how on helical conveyors with standing tube the transport safety must be converted to the operational position.

- First you attach the mounting feet to the surface by e.g. chemical anchor bolts. Please see to it, that the standing tube is absolutely vertical!
- Then you detach the angle steel (4 each) displayed.
- You attach the centrepieces of the included hollow rubber buffers to the fixtures of the standing tube.
- You attach the hollow rubber buffers each to an angle steel.
- Then you press the hollow buffers over centrepieces and you reattach the other side of the angle steel to the bottom of the conveyor spiral.
- Please check if the spiral can move freely.
- The rubber buffers now are used as a centering device for the torsion tube with spiral. They must be preloaded.

If unbalance motors are connected to the supply via a braking device, severe resonance strokes on run-out will be prevented. The vibrating equipment then comes to a stand still approx. 2 seconds. If vibrating equipment is fitted with a flexible seal or rubber cuffs at in- and outlet, the use of a braking device is strongly recommended.

Vibrating equipment with a moving mass >160kg, or with drives size E and upward, must never be used without dynamic braking!



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To prevent vibrating equipment from jumping of their supports from severe resonance strokes when running out unbraked (e.g. in case of an emergency or black out), you must on occasion apply a safety catch that limits the stroke.
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DANGER! If during an unbraked run out the vibrating equipment can jump of its support, you must attach a spring safety device. Perhaps even a safety catch to prevent the equipment from falling down!
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A5 Electrical hook-up



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ATTENTION! Only electro technically trained personnel as defined in IEC 364 and EN60204 part 1, must execute electrical hook-up and installation.
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Please proceed completely according to chapter 4.2 of the operating instructions. Please also pay attention to the wiring diagrams in view 4.3 en 4.5. You can rate the size of the fuses F1 and F2 according to the nominal current of the motors (see type tag). If a braking unit is supplied, all the necessary fuses are already included.

In case the motor starters and braking device are integrated in a switchboard, you must in all situations prevent one of two motors from being switched on solely. Please pay special attention when local safety switches are applied.



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ATTENTION! The use of only 1 motor of a driving pair leads to irreversible damage! Please prevent the motors from being switched of separately! If safety switches are used, please fit a suitable interlock.
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If a dynamic braking device is used, each motor must be hooked up with its own lead. The circuit uses this type of connection!

If the power supply is shut of during the braking phase, the motors run out unbraked!

Extra instruction on the use of frequency converters at twin drive.

Frequency converters can be used within limits. If a vibrating conveyor is driven with twin unbalance drive and a frequency converter is used, both motors must be connected to the same converter. The converter size can be based on the strating current that is needed for 2 motors at the same time!

If the motors are fitted with thermistors, which is preferable, please connect the sensors of both motors in series to the appropriate circuit of the converter. Not connecting the thermistors can lead to damage on the converter and/or motors! You can use the following items as a guideline for adjusting the converters parameters:

The minimum rpm can be determined by trial and error: the lowest possible rpm is the one at which the motors only just synchronize themselves.

The span of control lies between this value and max. rpm.

At switch-on accelerate to the max. rpm as fast as possible and after that eventually reduce to the required rpm.

At switch off, run down to 0 on the steepest possible ramp.

Let the motors on no occasion run out uncontrolled.

You can add DC-braking on demand.

For further details on possible adjustments of the converter, please refer to the instructions of the same.

A6 Modifications afterwards

Constructive modifications on vibrating equipment afterwards, such as lengthening or shortening, influence the behaviour and stability of vibrating equipment and are therefore not allowed. The adding afterward of e.g. wearing plates is possible within limits. If you add wearing plates afterwards, the moving mass is altered, thus resulting in a change of product flow.

Please check with AVITEQ on such occasion. We are pleased to help you with advise on possible alterations.

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