

Installation instructions for horizontal and vertical balancing machines

1. General Informations



INFORMATION

This document serves as a source of information for the preparation of installation surfaces, assembly and installation of horizontal and vertical balancing machines. The following information and instructions are based on HOFMANN's many years of experience and are to be considered as general recommendations for the installation of balancing machines on an industrial hall floor or on a specially constructed machine foundation.

Other specifications and instructions may apply for installation conditions such as storey ceilings. In this case, please contact your responsible HOFMANN sales representative for individual advice.

There should be no interfering machines or sources of vibration in the immediate vicinity of the balancing machine, especially in the case of force-measuring machines.

Whether the foundation slab at the desired installation site has the required properties should be checked at an early stage before the machine is installed.

We generally recommend that you have your new HOFMANN balancing machine installed by our experienced service technicians.

If you wish to carry out the installation yourself, we offer optional installation packages to make it easier for you to install the machine. These packages include the grouting mortar, grouting frame and drilling templates. Further information on this can be found in your HOFMANN balancing machine quotation.

2. Installation of the machine

In order to make optimum use of the working area of a balancing machine, it is essential to set up the machine bed on a suitable base. It is also essential to establish a good connection between the machine and the hall floor/foundation.

3. Preparing the installation surface

- A foundation/installation plan is supplied with every HOFMANN balancing machine. Please check this plan carefully. Important points here are dimensions, information on floor anchoring, position of the control cabinet, machine loading, etc.
- To ensure smooth installation of the machine, the required tools should be provided in advance. A list of the tools required is attached at the end of this document.

- In general, a distinction is made between two constellation conditions:
 - Installation on an existing industrial hall floor
 - Installation on a foundation specially made for the machine

Installation on an industrial hall floor is the most common installation variant. It is important to note that a number of properties must be met in order to ensure that the balancing machine functions in its specified range.

The following points must be checked by the customer on site:

- The load-bearing capacity of the industrial hall floor must be able to withstand the static and dynamic loads of the balancing machine including rotor
- Concrete quality min. C25/30
- The concrete floor must have an appropriate base layer
- Expansion joints or interruptions in the floor in the area of the balancing machine are not permitted
- The existing hall floor must not be surface-coated in the area of the machine in order to ensure good bonding of the grouting mortar
- The installation surface should have a flatness of < 3 mm and a slope of no more than 5 mm over the length of the bed so that the machine can be easily aligned using the leveling elements
- The existing hall floor must have a minimum thickness in order to be able to utilize the entire rotor weight range of the balancing machine

The following table shows the recommended thickness of the concrete slab depending on the rotor weight:

Rotor weight	Recommended minimum thickness of the concrete slab
Up to 150 kg	150 mm
Up to 700 kg	200 mm
Up to 3000 kg	250 mm
Up to 8000 kg	350 mm
Up to 12500 kg	600 mm

If one or more of these points do not apply, it is recommended to create a special machine foundation for balancing machines or to prepare the existing ground. The actual design of the foundation must be determined by a structural engineer, as the local conditions can have a major influence on the design of the necessary foundation block. The costs for the planning and implementation of the foundation are to be borne by the customer.

The same applies to the installation of balancing machines on storey ceilings.

4. Installation of the machine

4.1. Preparation

- Use the foundation/installation plan to mark the exact position of the machine, the protective device and the working area of the machine with adhesive tape or chalk on the hall floor.
- Please check whether there is access to a crane or other handling device at the intended installation position in order to be able to load and unload the machine. It must also be possible to supply the machine with electricity and compressed air (if required) at this location.
- Mark the drilling positions for anchoring the machine with a waterproof pen. To do this, place the machine in the previously marked position and mark the drilling points on the hall floor through the machine's fastening holes. Set the machine aside for the subsequent drilling of the anchor holes.

Remark:

When using the optionally available drilling template, the machine does not need to be set up in advance. This makes it easier to mark the drill holes.

Finally, check all drilling positions again to avoid errors.

4.2. Drilling

- Drill the fixing holes for the machine at the previously marked positions. Refer to the HOFMANN foundation/installation plan for further information on design, drill hole depth and diameter. If the fixing holes are drilled with a core drill, the holes must be roughened acc. to the instructions of the fixing system manufacturer.
- After drilling, clean the installation surface and the drill holes thoroughly so that they are free of dust and oil. If you have not already done so, remove any existing surface coatings in the area of the machine installation.
- Insert the composite anchor rods into the drill holes.

4.3. Alignment

- Setup the supplied leveling elements to the height specified in the foundation/installation plan and position them accordingly.
- Use a crane or forklift to place the machine on the leveling elements and thread the anchor rods through the machine's mounting holes. Ensure that the machine is correctly oriented. Please refer to the foundation/installation plan for the permissible transport points.
- Align the machine bed using the leveling elements. No high tolerances are required for the alignment itself (usually 0.2 mm/m), so you can check this with a spirit level. Please refer to the installation plan for precise information on the required alignment accuracy.
- Once the machine bed has been aligned according to the specifications, any existing cardan shaft drive is aligned with the bearing pedestals.
- Once the machine and End drive are properly aligned, tighten the fastening nuts evenly by hand without changing the alignment. The washers supplied must be used.

- For machine beds with bearing pedestals, it is advisable to move the bearing pedestals along the entire machinebed before casting.
- For machines with End drive, we recommend that grouting is not carried out until a Hofmann service technician has checked the alignment.

4.4. Grouting (required for force-measuring balancing machines)

- Create a grouting frame according to the installation plan supplied and place it around the machine. Secure the frame against slipping and floating. We recommend the use of impact screws for this purpose.
- Clean the floor before pouring. Remove loose particles, dust, cement slurry, oil and grease. Then wet the area to be grouted thoroughly, but without creating puddles, before grouting.
- The machine can now be grouted to create a large contact surface. To do this, mix the grouting mortar according to the manufacturer's instructions and fill it into the gap between the machine and the grouting frame until it protrudes approx. 5 mm above the lower edge of the machine. A simple filling chute made of sheet steel makes filling easier.
- When grouting, make sure that the grout is evenly distributed under the machine and that there are no cavities.
- The drying time of the grouting mortar according to the manufacturer's instructions must be observed.
- Once the grouting mortar has dried, remove the grouting frame and tighten the fastening nuts according to the torque specifications in the foundation/installation plan.

4.5. Connection of the machine

- Position the control cabinet at the intended location and connect the existing supply cable to the power supply.
- If necessary, connect the compressed air supply to the machine.
- Before you switch on the machine for the first time, please contact Hofmann Customer Service to arrange a service appointment. Our service technician will complete the wiring and check all connections again.

4.6. Installation of the B-protective device

We recommend that the installation of the protection system is carried out by 2 employees.

- Assemble the complete safety guard loosely and align it at the previously marked position. It is important to check and maintain the distance from the danger zone, the machine, foundation edges, etc.
- Then anchor the posts to the hall floor using the screws supplied. Align the posts with a spirit level. If longer fence sections are to be installed, it is advisable to use a straightedge to align the posts.

5. Tools required

- Forklift or crane with sufficient load capacity for the machine weight
- Sling chain or lifting strap with sufficient load capacity
- Hammer drill / core drill
- Drilling tool in suitable size
- Setting adapter for bonded anchor cartridges*
- Chalk, adhesive tape, permanent marker
- Spirit level (alignment/frame spirit level, accuracy < 0.2 mm/m)
- Crowbar for aligning the machine
 - Impact screws and material for the grouting frame *
- Sandblasting device or hammer drill with chisel tool (only required for coated surfaces)
- Cleaning device according to the anchor manufacturer's setting instructions for cleaning the drill hole
- 2 dial gauges and alignment shaft (only for cardan shaft drive)
- Filling aid for the grouting mortar made of sheet metal (1.5 x 300 x 450 mm)
- Mortar stirrer with sufficiently large mortar bucket or alternatively, depending on the required quantity, a compulsory mixer
- Mortar trowel
- Tarpaulin
- Guideline
- Torque wrench
- Gavel



INFORMATION

The listed accessories are either required or simplify the installation of the machine. They are not included in the standard scope of delivery of the machine. Suitable equipment can be provided by Hofmann on request for a rental fee.

The tools marked with * are included in the optionally available installation kit. Hand tools such as pliers, screwdrivers, hexagon wrenches in various sizes are not listed, but are also required.

6. Scope of installation, commissioning and instruction on the machine

The condition of the installation area and the working conditions for our service personnel must allow work to begin immediately and be carried out without waiting or loss of time. Any overtime work must be carried out to the extent generally possible.

If assembly, commissioning or instruction is delayed due to waiting or lost time through no fault of HOFMANN, the period of use shall be extended accordingly. Waiting and downtimes shall be charged in accordance with the HOFMANN price list for services.

The lifting equipment required to carry out the work and the energy required to supply the tools, such as electricity and compressed air, must be provided by the customer. The free use of telecommunications media by our personnel is a matter of course. Social rooms must be accessible to our service personnel for the entire duration of the work.

6.1. Preparation for installation and commissioning of the machine

The following work must be carried out by the customer in preparation for the installation and commissioning of the balancing machine, unless this is part of the HOFMANN scope of services:

- Preparation of the installation area and, if necessary, creation of a machine foundation
- Unloading the machine and checking the scope of delivery
- In-house transportation to the installation site
- Provision of the media supply as specified in the installation plan
- Provision of tools and rotors, which can be used to test the machine and provide instruction

If the above points have not been dealt with or have only been partially dealt with, this may result in the planned duration of the assignment being exceeded.

6.2. Scope of services for installation and commissioning of the machine

The following work is carried out by our service technicians **during installation and commissioning** on site:

- Installation of the machine and the protective device according to the installation plan
- Wiring the control cabinet to the machine
- Checking the direction of phase rotation after connection of the electrical supply by the customer
- Calibration of the machine and verification of machine capability
- If necessary, a suitable test rotor must be provided by the customer
- Instruction in machine operation using a customer part for a period of 2 hours

6.3. Scope of services for commissioning the machine for installation by the customer

During commissioning on site, the following work is carried out by our service technician:

- Checking the work carried out by the customer, such as setting up and aligning the machine
- Wiring of the control cabinet to the machine
- Checking the direction of phase rotation after connection of the electrical supply by the customer
- Calibration of the machine and verification of machine capability
- If necessary, a suitable test rotor must be provided by the customer
- Instruction in machine operation using a customer part for a period of 2 hours

7. Additional Services

We also offer other services on request:

- Unloading of the machine and internal transportation in the presence of a HOFMANN service technician
- Extended instruction in machine operation
- Balancing seminars for balancing rigid and/or flexible rotors
- Production support
- Vibration analyses

Contact:

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