O-INSPECT 5/4/3
Installation site requirements

Coordinate measuring machine for contact and optical measurements

ZEISS

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General

Safety during transport and installation

Requirements for safe working conditions:

- The hoisting equipment and lifting tackle (e.g. rope) used, must be in proper working order and checked in accordance with the applicable standards and directives.
- Personnel operating such equipment must be trained in the required work and be able to safely operate this hoisting equipment.
- The hoisting equipment must be designed to accommodate the size and weight of the transported material.

Delivery package

The CMM is comprised of the following components:

- Coordinate measuring machine (CMM)
- Controller (integrated)
- Control console
- Base
- Data system and peripheral devices (optional)

Coordinate measuring machine parameters

Category	Parameter
Overvoltage category	II
Degree of contamination	2
Protection class	1

Logistics and In-plant Transport

Unloading/ in-plant transport

Requirements

- Sufficient floor and ceiling load capacity of the transport routes.
- Transport routes must be clear.
- The transport routes and doorways must be at least 10 cm wider and higher than the CMM assemblies, including transport equipment. The dimensions of the CMM assemblies can be found under Shipping crates.
- The CMM assemblies may be transported to the installation site only on a pallet and in a secured condition.
- To unload and transport the CMM assemblies, hoisting equipment is required, e.g. a forklift with sufficient weight-bearing capacity and dimensions.
- A ring bolt must be attached to the center of gravity of the base in order to transport it to the installation site.
- A crane or forklift is required to lower O-INSPECT 5/4/3 onto its base.
- The CMM must be lifted with chains or lashing straps. It is not possible to lift the CMM from underneath with a fork lift. For transport, we recommend using 4 short (500 mm) belts and 4 load rings (eye bolts) with an M16 thread. If the CMM will be lifted from the front, a fork lift with long, narrowly spaced fork arms is required to enable vertical attachment of the 4 straps.
- Another possibility would be to raise it from the side. Standard length fork arms are sufficient for this. However, the two fork arms must be spaced at least 1200 mm apart.
- If the system will be transported by crane, a crossbeam with a length of at least 1200 mm is required.

Avoid transport damage
The fork arms, straps or chains must never touch the CMM bridge or any parts thereof during transport. The exertion of mechanical force on the travel axes of the CMM must be avoided, as this will damage the CMM.

NOTE
There is a lifting slot behind the removable cover on the base to move/transport the base with a lifting truck or forklift. This also applies for short distances with a mounted CMM. However, this requires the utmost caution. This means that a mounted CMM is top-heavy and also that, during transport with a pallet jack, the system can be subjected to vibrations which influence the accuracy of the CMM.

Shipping crates for O-INSPECT 5/4/3

The CMM assemblies are delivered securely on shipping pallets.

Shipping crates for:	Dimensions, max. [mm]			Max. gross weight (kg)
	Length	Width	Height	CMM, crates, pallet
O-INSPECT 5/4/3	1850	1260	2120	760
Base	1430	1220	660	187
Accessories	-	-	-	-

All values are maximum values. For production reasons, the dimensions of the shipping crates (length, width and height) may deviate by as much as +50 mm.

Intermediate storage/unpacking

– Store the packed CMM assemblies in a sheltered location as close as possible to the installation site.

– Storage temperature: +5° to +40°C.

Risk of corrosion if protective cover missing.

- If the machine is stored for any length of time, the protective cover must **not** be removed. The cover is a component of the CMM packaging and should always be kept with it.
- The CMM must remain inside the protective cover at its final installation site for at least 24 hours before the cover is opened or removed. This is the only way to prevent rust damage due to condensation.
- Only a ZEISS service technician or specially trained personnel are authorized to remove the protective cover.

NOTE

Packing materials such as disposable transport packaging, covers or Styrofoam chips are reused by ZEISS and can be returned to ZEISS.

ZEISS recommends storing the disposable packaging and the transport locks in a safe location (to protect them against damage) in case the CMM has to be moved to another site at a later date.

Adaptation to room temperature

– No later than 2 days before the arrival of our system specialists, bring the CMM assemblies to a storage location with an environmental temperature of at least +15°C.

Relocating an installed CMM

NOTE

To avoid any damage to the CMM, it may only be relocated when properly secured with transport braces and under the supervision of our system specialists.

Preparatory measures:

- The measuring table must be clear
- Remove probe.
- The control console and the control console holder must be removed.
- If a changer rack is installed, it must also be removed.

Planning and Measuring Lab Preparation

General protection measures

The CMM must be protected against heavy contamination. Deposits require additional cleaning and maintenance and can result in malfunctions and damage to the CMM.

Doorway dimensions in the measuring lab

The doorways to the measuring lab must be at least 10 cm wider and higher than the dimensions of the secured CMM with base and without shipping pallet.

The dimensions of the CMM assemblies can be found in the chapters on "shipping containers" and "installation dimensions".

Room height of the measuring lab

The required room height is the sum of the height of the CMM and the minimum sub-ceiling installation clearance. The required minimum room height above the floor or foundation is listed in the chapter on "installation dimensions".

Floor

The floor must be clean.

Maximum difference in level between the 3 support surfaces: ≤5 mm

Max. tilt per support surface (100 x 100 mm): 1 mm

The supplied base must be fastened to the floor by the customer. (See the chapter on securing the base for the dimensions and information)

Floor plan

If you create an floor plan on a CAD system, you can produce a DXF and/or a DWG file containing the dimensions. If you require further assistance, please contact your Carl Zeiss representative.

Note: When creating floor plan, ensure that your coordinate measuring machine can be easily accessed from all sides. Installation near transport routes must be avoided.

Floor load

When calculating or planning any necessary floor reinforcements, we recommend consulting a structural engineer familiar with your local soil conditions. The floor load resulting from the CMM can be found in the chapter on "installation dimensions".

Vibrations at the installation site

Vibrations are frequently caused by heavy machinery, transport equipment (cranes or forklifts), presses and forging machines in adjacent rooms and can impair measuring accuracy.

To prevent as many of these impairments as possible, the CMM is equipped with an integrated damping system and is therefore largely vibration-resistant.

A measurement is required to evaluate the extent of the floor vibrations.

ZEISS can be requested to complete a vibration analysis; If required, contact your ZEISS representative. The results must be made available to ZEISS.

Various parameters, such as frequency and amplitude of the prevalent acceleration, must be captured and analyzed for a comparable evaluation. The results of the vibration analysis will be subsequently evaluated by our specialists.

The diagrams for vibrations at the installation site can be found in the chapter on "limit curves of permissible floor vibrations".

Environmental conditions

NOTE

The environmental conditions are vital to compliance with the accuracy specifications:

- Avoid direct heat (e.g. controller cabinets of machine tools, heaters, lighting, sun).
- Avoid cold air and drafts (e.g. outside walls, windows, doors).
- Additional information can be found in VDI/VDE 2627.

Environmental conditions for operational readiness

The following conditions must be met to properly operate the coordinate measuring machine.

Permissible environmental temperature		+17°C to +35°C
Permissible humidity (without condensation)		40% to 70%
Height above mean sea level	At 100-125 V	3000 m
	At 230-240 V	2000 m
Permissible acoustic pressure on probe	Single frequencies (50-2000 Hz)	75 dB (A)
	Mixed frequencies (50-2000 Hz)	80 dB (A)

Environmental conditions for measuring operations

To comply with the accuracy values, the following action must be taken:

– The CMM must rest at the installation site for at least one day before the start of measuring operations.

– Enter the expansion coefficients of the workpiece in the measuring software.

– Comply with the temperature conditions. See table.

Permissible humidity (without condensation)	40% to 70%		
Reference temperature for measurement	18°C to 30°C		
Temperature fluctuation	Per hour	Per day	Spatial
	1.0 K/h	2.0 K/d	1.0 K/m

Electrical Specifications and Network Data

Notes on electrical power supply

Malfunctions resulting from insufficient power supply.
Continuous power supply must be ensured to operate the CMM, particularly for the data system. Other systems with permanently high power consumption and systems with peak loads should not be connected to the same electrical circuit as the CMM. This avoids malfunctions.

Malfunctions resulting from stray radiation.
Stray radiation impairs the operation of the CMM.

- Do not operate the CMM near systems that emit strong stray radiation.
- Do not use mobile phones or walkie-talkies within 3 meters of the CMM.

NOTE
The CMM complies with the requirements of the following standard:

- EN/IEC 61326-1: EMV - Interference immunity; Table 2, interference emission, Class A.

Information about electromagnetic compatibility (EMC)

The CMM is a class A device and may cause radio interference in living areas. In such cases, operators may be required to take adequate measures at their own expense.

For peripheral devices (e.g. computer, monitor, etc.), the specifications of the respective manufacturer apply.

Electrical power supply parameters

To ensure trouble-free data transmission between the CMM and the data station, the power supply must meet the following specifications.

Category			Value
Line voltage			100-240 V~ (±10%)
Type of current			1/N/PE
Frequency			50 to 60 Hz (±3.5%)
Power consumption	CMM	Maximum	600 VA
		Typical (thermal load)	170 W
	Data systems and peripheral devices	Maximum	1000 VA
Fuse	230-240 V		C 16 A
	100-125 V		15 A

Power supply stabilization

A line-voltage analysis should be performed when brief, out-of-tolerance r.m.s. fluctuations of the nominal voltage occur. If required, please contact us for more information. We will be glad to assist you and recommend suitable measures. Usually, separate stub cables from the main distribution frame to the connection point of the CMM are sufficient.

Required connections

– Two shock-proof (Schuko) wall outlets (max. 16 A) in the direct vicinity of the installation site. This measure must be carried out prior to installation.

– A 5-outlet (or more) power strip (to be provided by the customer).

Power for the CMM must be supplied by one of the wall outlets.

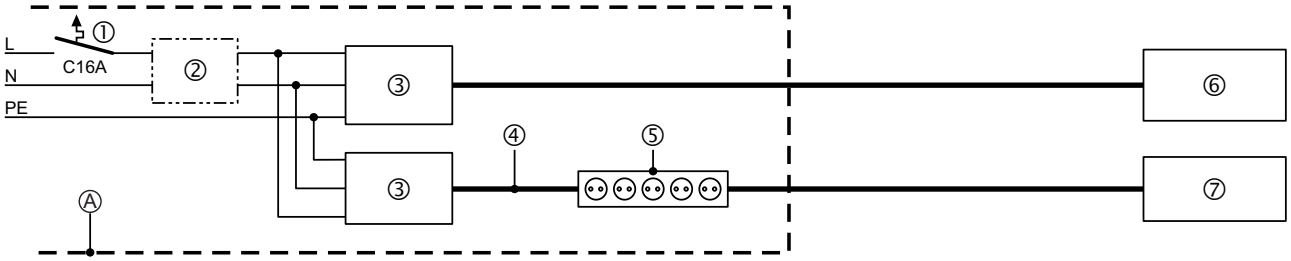
The power cable with corresponding plug is connected to the controller of the CMM by ZEISS service technicians during the initial installation.

The second outlet is required for the power strip via which the data system and peripherals are powered. As general overvoltage protection, we recommend installing a surge protector.

Connection diagram

We recommend installing the connection in accordance with the following diagram.

Note: Comply with applicable national regulations.



A Customer installation of local voltage (suggested)
1 Circuit breaker (min. 15 A, max. 16 A)
2 Recommended: residual current circuit breaker
3 Shock-proof outlet
4 Connection cable ≥5 m
5 5-outlet power strip
6 CMM
7 Peripheral devices (max. power consumption 1000 VA)

Network connection

A network connection is required for:

– Data backup

– Teleservice (this is a ZEISS-recommended service and requires an Internet connection).

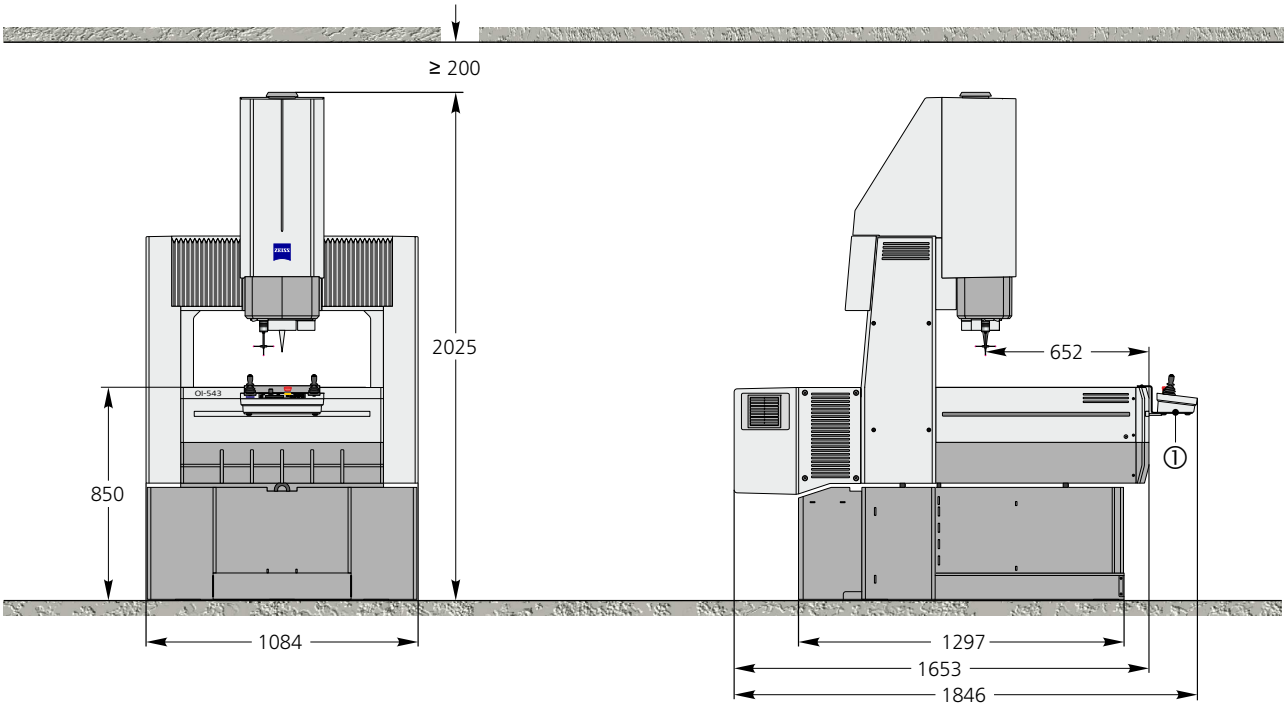
An Internet connection is not required for the installation of the CMM.

Network topology

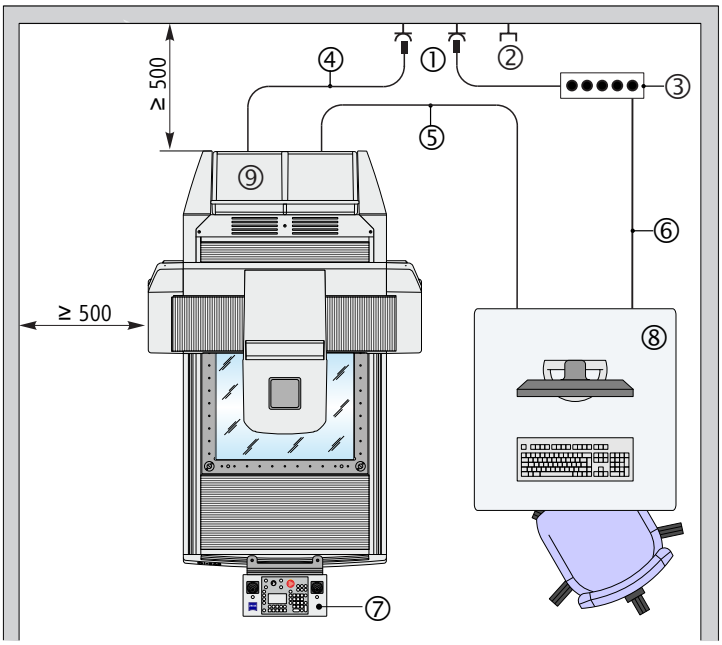
System components are networked during start-up by a ZEISS service engineer (or a specialist authorized by ZEISS) in accordance with the applicable specifications and must not be modified by the customer. Any change may lead to connection problems.

Installation Dimensions/ Sample Installation/ Weights

O-INSPECT 5/4/3 with standard base



Front and side view/ M 1:30/ all dimensions in millimeters



1 2x shock-proof wall outlets to be installed by the customer (local voltage) (1x for the CMM, 1x for the power strip)

2 Network connection for data backup and Internet (Teleservice)

3 Power strip (5 outlets) for peripheral devices (provided by customer)

4 Power cable: power supply for controller

5 Network cable: CMM - data system

6 Power cable (≥5 m): power supply for data system (e.g. computer, printer, monitor)

7 Control console tray (removable)

8 Table (option) for data system and peripheral devices

9 Controller

Note: All CMM components must be accessible for service work.

Weight		Value
CMM	[kg]	580
Base	[kg]	150
Workpiece, max.	[kg]	25

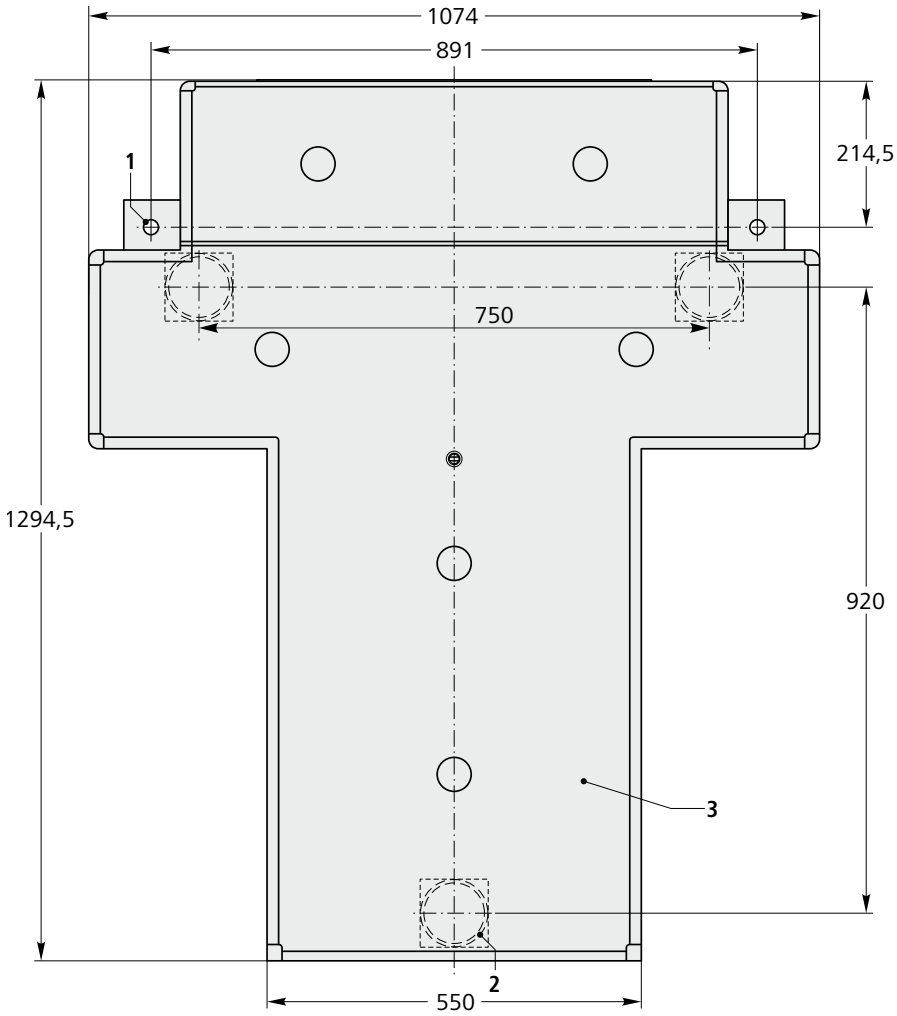
Floor load		Value
Mean surface pressure on the 3 support surfaces:	[N/mm²]	0.31
Support surfaces:	[mm²]	3 x 8190.44

Securing the base

To ensure the stability of the CMM, the standard base must be anchored to the floor.

The fastening material for the base is included with delivery.

Note: The boreholes to anchor the base must be drilled by the customer for warranty reasons.



1 Mounting holes

2 Position and contact area for the 3 feet on the CMM.

3 Base height approx. 460 mm.

Base/ dimensions in millimeters

2 plug screws are included with delivery to anchor the standard base to the floor (foundation). The plug screws must be anchored into the foundation.

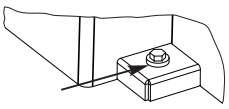
There is a risk of tipping if not properly anchored.

If the floor covering is too thick and the plug screws cannot be anchored sufficiently as a result, there is a risk of tipping.

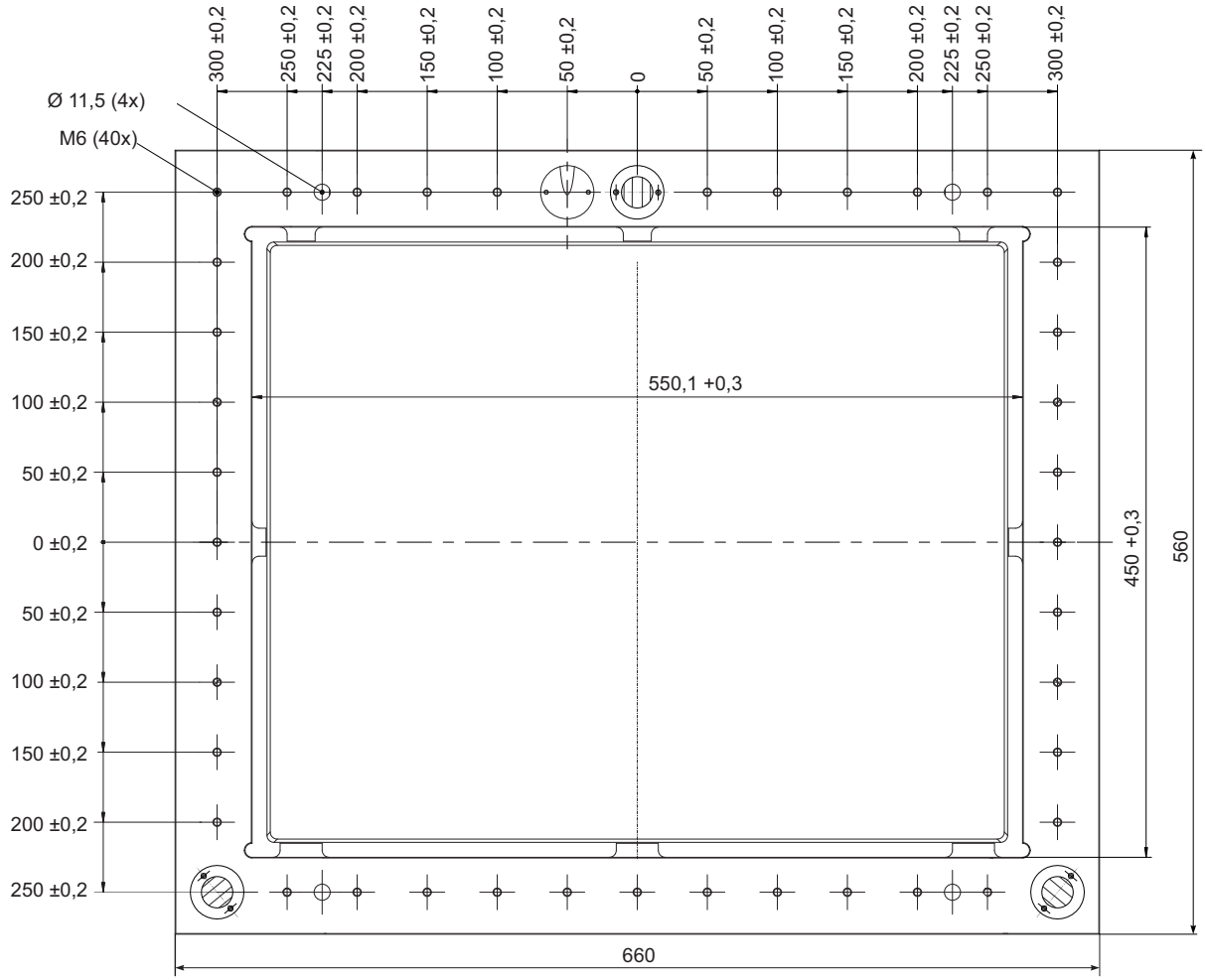
- In this case, customers must provide sufficiently long plug screws.

NOTE

The plug screws are not tightened. There must be a gap of 1-2 mm between the head of the plug screw and the base. This provides the necessary tilt protection and does not have a negative effect on the 3-point support of the base.



O-INSPECT 5/4/3 measuring table



Position of the threaded holes/ dimensions in millimeters

Limit Curves of Permissible Floor Vibrations at the Installation Site

Permissible foundation acceleration for O-INSPECT 5/4/3 with standard damping

Note: Acceleration values above the curve require additional damping.