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WEIGHING LEVELLING FEET

THANKS FOR YOUR INTEREST SEE MORE AT
WWW.NGI-Global.com

ALL NGI LEVELLING SYSTEMS ARE
DESIGN AND PATENT PROTECTED

THE STORY OF WEIGHING LEVELLING FEET

NGI has for many years delivered levelling feet for different load cell solutions often involving some kind of mounting kit for the load cell. The mounting kits were specially designed for load cells to guarantee the best weighing performance by guiding and protecting the load cell and they were often complicated in design, with no levelling possibility and impossible to clean.

Over the years, Load cells have become so small that they could easily be integrated into a machine foot design. After identifying this opportunity, NGI found a partner to supply and support the load cells used in our design and started the development process.

The excellent load cells of our partner, combined with our unique knowledge within vulcanization of machine feet and hygienic design has resulted in a solution that merged weighing, levelling and hygiene. After 2 years of development, we are very proud to present **NGI's WEIGHING LEVELLING FOOT**.

NGI's Weighing Levelling foot can be used for filling level measurements of tanks and other vessels with a $\pm 1\%$ accuracy. The implementation and installation of our solution will be much simpler compared to other solutions, such as ultrasonic, radar or hydrostatic pressure measurements.



WEIGHING LEVELLING FEET



PLUG N' PLAY
INSTALLATION



CERTIFIED
HYGIENICS



MINIMIZED
CLEANING TIME



MINIMIZED
WATER USAGE

THE ONLY HYGENIC **WEIGHING LEVELLING FEET**
IN THE WORLD WITH **BUILT-IN LOAD CELL**
FOR MESSUREING OF **FLUID LEVEL AND WEIGHING** OF PRODUCTS
SECURED, GUIDED AND PROTECTED INSIDE THE FEET

SELF-DRAINING SURFACES, SEALED MOVABLE PARTS AND
NO EXPOSED THREAD SECURES **ABSOLUTE MINIMUM CLEANING**
AND **MAXIMUM PRODUCT SAFETY**

Up to 5 ton

Up to 16 ton



Minebea
intec
The true measure

NGI[®]
HYGIENIC LEVELLING SYSTEMS



The "Standard" Models

Per model we offer over 30 variations



Standard Feet



Solid feet with float mounts



Heavy Duty and Seismic



SEISMIC & WEIGHING LEVELLING FEET

Up to 16 ton



PRODUCT GROUP

STANDARD FEET

The design and patent protected NGI weighing levelling feet is the optimal choice for supporting and easy weighing of machinery, equipment, tanks and vessels in environments.

NGI weighing levelling feet are optimized for 2 very compact Sartorius load cells that guarantee the best weighing performance in very compact constructions, unmatched reliability, robustness and stability, which enable trouble-free operation without adjustment, year after year. Other brands of load cells are also compatible.

In this product group NGI offers two very compact designs. Load group one is for maximum loads from 50 kg-300 Kg, two is for maximum loads from 0.5-5 ton. NGI design combined with the special measuring element geometry in the load cell ensures that the transmission of forces into the load cell is always at the optimum level. This minimizes the disruptive effect on measurement accuracy whilst a high overload range, high repeatability and good linearity are maintained.

Product Group Features

- Plug n' play height-adjustable compact design
- One-point impact between load cell and spindle ensures direct and friction free transfer of force
- Stainless steel AISI 304/A2, 1.4301. Optional AISI 316/A4, 1.4401
- Only complete hygienic designed weighing levelling solution on the market
- Designed according to 3A and EHEDG hygienic standards
- Certified according to USDA hygienic standards
- Self-draining surfaces and safety against exposed thread secures absolute minimum cleaning
- All movable parts are 100% hygienically sealed even if the load on the foot is removed
- All sealing are blue and therefore detectable by scanning systems



XHW

Special Features

- Height variation minimum 110mm – maximum 211mm
- Maximum weight load 5 ton
- Spindle sizes M16, M20, M24, M30 & M36
- Footplate sizes Ø 80, Ø105, Ø125 & Ø150mm
- Admits up to 5° slope on floors and equipment
- Vulcanized FDA-approved, anti-vibration, anti-slip rubber blocks out bacteria underneath the footplate and protects the load cell
- Thread covered with hygienic sleeve functioning as counter nut



XHTW

Special Features

- Height variation minimum 55mm – maximum 350mm
- Maximum weight load 5 ton
- Spindle sizes M16, M20, M24, M30 & M36
- Footplate sizes Ø105, Ø125 & Ø150mm
- Admits up to 5° slope on floors and equipment
- Vulcanized FDA-approved, anti-vibration, anti-slip rubber blocks out bacteria underneath the footplate and protects the load cell
- The spindle is fully threaded which enable low adjustment of machinery



HXTW

Special Features

- Height variation minimum 110mm – maximum 211mm
- Maximum weight load 5 ton
- Spindle sizes M16, M20, M24, M30 & M36
- Footplate sizes Ø105, Ø125 & Ø150mm
- Admits up to 10° slope on floors and equipment
- Vulcanized FDA-approved, anti-vibration, anti-slip rubber blocks out bacteria underneath the footplate and protects the load cell
- Thread covered with hygienic sleeve functioning as counter nut
- Separated spindle from weighing footplate makes maintenance easier
- Spindle indirectly connected to the load cell through the footplate.



HXTW

Special Features

- Height variation minimum 55mm – maximum 350mm
- Maximum weight load 5 ton
- Spindle sizes M16, M20, M24, M30 & M36
- Footplate sizes Ø105, Ø125 & Ø150mm
- Admits up to 10° slope on floors and equipment
- Vulcanized FDA-approved, anti-vibration, anti-slip rubber blocks out bacteria underneath the footplate and protects the load cell
- The spindle is fully threaded which enable low adjustment of machinery
- Separated spindle from weighing footplate makes maintenance easier
- Spindle indirectly connected to the load cell through the footplate.

Hygienic Threads come in the standard Lengths 150mm and 210mm. Our fully threaded version offers more variety in lengths, for this please contact our sales staff.

The Special T-Version makes transportation exceptionally easy since it can be removed during transport to avoid any damages to the load cells due to overload

PRODUCT GROUP

SOLID FEET

The design and patent protected NGI weighing levelling feet is the optimal choice for supporting and easy weighing of machinery, equipment, tanks and vessels in environments.

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Product Group Features

- Plug n' play height-adjustable compact design
- One-point impact between load cell and spindle ensures direct and friction free transfer of force
- Stainless steel AISI 304/A2, 1.4301. Optional AISI 316/A4, 1.4401
- Only complete hygienic designed weighing levelling solution on the market
- Designed according to 3A and EHEDG hygienic standards
- Certified according to USDA hygienic standards
- Self-draining surfaces and safety against exposed thread secures absolute minimum cleaning
- All movable parts are 100% hygienically sealed even if the load on the foot is removed
- All sealing are blue and therefore detectable by scanning systems



XHGW / XHJW

- Height variation minimum 110mm – maximum 211mm
- With and Without fixing holes for floor mounting
- Maximum weight load 5 ton
- Spindle sizes M16, M20, M24, M30 & M36
- Footplate sizes Ø105, Ø125 & Ø150mm
- Admits up to 10° slope on floors and equipment
- Vulcanized FDA-approved, anti-vibration, anti-slip rubber blocks out bacteria underneath the footplate and protects the load cell
- Thread covered with hygienic sleeve functioning as counter nut
- Separated spindle from weighing footplate makes maintenance easier
- Spindle indirectly connected to the load cell through the footplate.



XHGTW / XHJTW

- Height variation minimum 55mm – maximum 350mm
- Maximum weight load 5 ton
- Spindle sizes M16, M20, M24, M30 & M36
- Footplate sizes Ø105, Ø125 & Ø150mm
- Admits up to 10° slope on floors and equipment
- Vulcanized FDA-approved, anti-vibration, anti-slip rubber blocks out bacteria underneath the footplate and protects the load cell
- The spindle is fully threaded which enable low adjustment of machinery
- Separated spindle from weighing footplate makes maintenance easier



HXGW / HXJW

- Full height Adjustment over entire Thread
- Maximum weight load 5 ton
- Spindle sizes M16, M20, M24, M30 & M36
- Footplate sizes Ø105, Ø125 & Ø150mm
- Admits up to 10° slope on floors and equipment
- Vulcanized FDA-approved, anti-vibration, anti-slip rubber blocks out bacteria underneath the footplate and protects the load cell
- Thread covered with hygienic sleeve functioning as counter nut
- Separated spindle from weighing footplate makes maintenance easier
- Spindle indirectly connected to the load cell through the footplate.



HXGTW / HXJTW

- Full height Adjustment over entire Thread
- Maximum weight load 5 ton
- Spindle sizes M16, M20, M24, M30 & M36
- Footplate sizes Ø105, Ø125 & Ø150mm
- Admits up to 10° slope on floors and equipment
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- Thread covered with hygienic sleeve functioning as counter nut
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Hygienic Threads come in the standard Lengths 150mm and 210mm. Our fully threaded version offers more variety in lengths, for this please contact our sales staff.

The Special T-Version makes transportation exceptionally easy since it can be removed during transport to avoid any damages to the load cells due to overload

PRODUCT GROUP

HEAVY-DUTY FEET

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Product Group Features

- Plug n' play height-adjustable compact design
- One-point impact between load cell and spindle ensures direct and friction free transfer of force
- Stainless steel AISI 304/A2, 1.4301. Optional AISI 316/A4, 1.4401
- Only complete hygienic designed weighing levelling solution on the market
- Designed according to 3A and EHEDG hygienic standards
- Certified according to USDA hygienic standards
- Self-draining surfaces and safety against exposed thread secures absolute minimum cleaning
- All movable parts are 100% hygienically sealed even if the load on the foot is removed
- All sealing are blue and therefore detectable by scanning systems



XHGSEW / XHJSEW

Special Features

- Patented locking mechanism secures safe transport (no dummy needed)
- Designed to withstand high horizontal forces
- Height variation minimum 189mm – maximum 329mm
- Maximum weight load 16 ton
- Spindle sizes M30, M36, M42 & M56 (Optional in BSPP & UNC)
- Footplate sizes Ø150, Ø200 & Ø250mm
- Admits up to 8° slope on floors and equipment
- Thread covered with hygienic sleeve functioning as counter nut



HXGEW / HXJEW

Special Features

- Patented locking mechanism secures safe transport (no dummy needed)
- Designed to withstand high horizontal forces
- Seismic calculated and can obtain extreme pull forces
- Seismic stability by seismic anchors approved by our experienced partner Hilti
- Height variation minimum 189mm – maximum 329mm
- Maximum weight load 16 ton
- Spindle sizes M30, M36, M42 & M56 (Optional in BSPP & UNC)
- Footplate sizes Ø150, Ø200 & Ø250mm
- Admits up to 8° slope on floors and equipment
- Thread covered with hygienic sleeve functioning as counter nut



XHGSEI / XHJSEI / HXGEI / HXJEI

Special Features

- Patented locking mechanism secures safe transport (no dummy needed)
- Designed to withstand high horizontal forces
- Seismic calculated and can obtain extreme pull forces
- Seismic stability by seismic anchors approved by our experienced partner Hilti
- Height variation minimum 189mm – maximum 329mm
- Maximum weight load 16 ton
- Spindle sizes M30, M36, M42 & M56 (Optional in

Hygienic Threads come in the standard Lengths 150mm and 210mm.

The Non-Seismic Heavy Duty foot can also be made as a T-Version.

NGI offers the possibility to order these feet in the I-Version, which is the same model but without the load cell installed. These feet can be used to keep a similar look among all feet and to avoid height differences between between load cell feet and regular feet.

WEIGHING LEVELLING FOOT

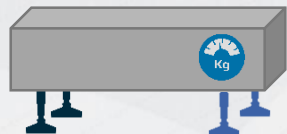
FAQ ABOUT WEIGHING LEVELLING FOOT

Why use load cells.

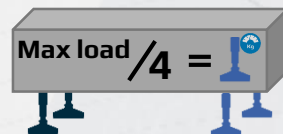
A pressure sensor will not measure the weight of the tank correctly if a tank is pressurized
 A level sensor will not measure the weight of the tank correctly if there is foam in the tank
 In order to measure the total weight of part of the machine or entire machinery
 In order to supplement and verify, a level sensor, a pressure sensor or a flow sensor.
 Because it is easy and seldom require changes in the existing design.
 Because it is the most hygienic solution that also ensures optimum measurements.



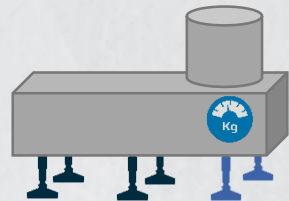
Machinery on 3 feet can measure total load with 1 foot if the load is evenly distributed on all the feet.



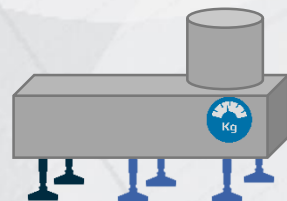
Machinery on 4 feet can measure total load with 2 feet if the load is evenly distributed on all the feet.



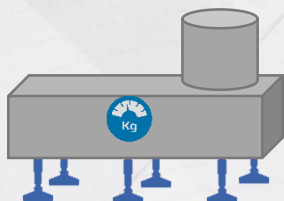
To find the maximum load on the foot take the total weight of the machinery filled with product and divide it by the number of feet if the load is evenly distributed on all the feet.



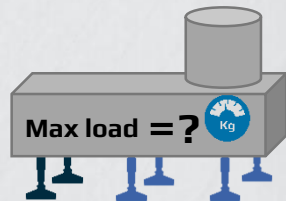
When load is not measured on all feet that supports the machinery use the ones with maximum load.



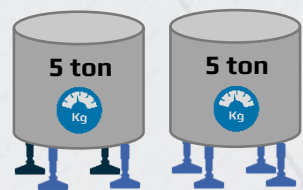
Total load of machinery with more than 4 feet can be measured if the feet that represent most of the load is chosen.



Optimal weighing is ensured by measuring the load on all feet regardless of how many that supports the machinery.



If the load is NOT evenly distributed on all the feet, calibrate the weight with known weight of material in your PLC.



Machinery and product = max 5 ton.
 $5000/4 = 1250 \text{ kg} \Rightarrow 2000 \text{ kg load cell.}$



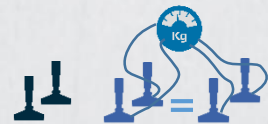
For loads less than 300 kg NGI recommend the feet XHSW, XHTSW, HXW and HXTW size 80 and 105 to obtain maximum accuracy.



When loads are higher than 5 tons, when there are tensile forces or lateral forces exceeding 250N use the feet XHGSW, XHJSEW, HXGW and HXJW.



When seismic activity use XHJSEW or HXJW after advice from NGI.



All load cells may be connected in one box



Matching sizes and designs are available with or without build-in weighing cell

WEIGHING LEVELLING FOOT

HOW TO SELECT THE RIGHT LOAD CELL

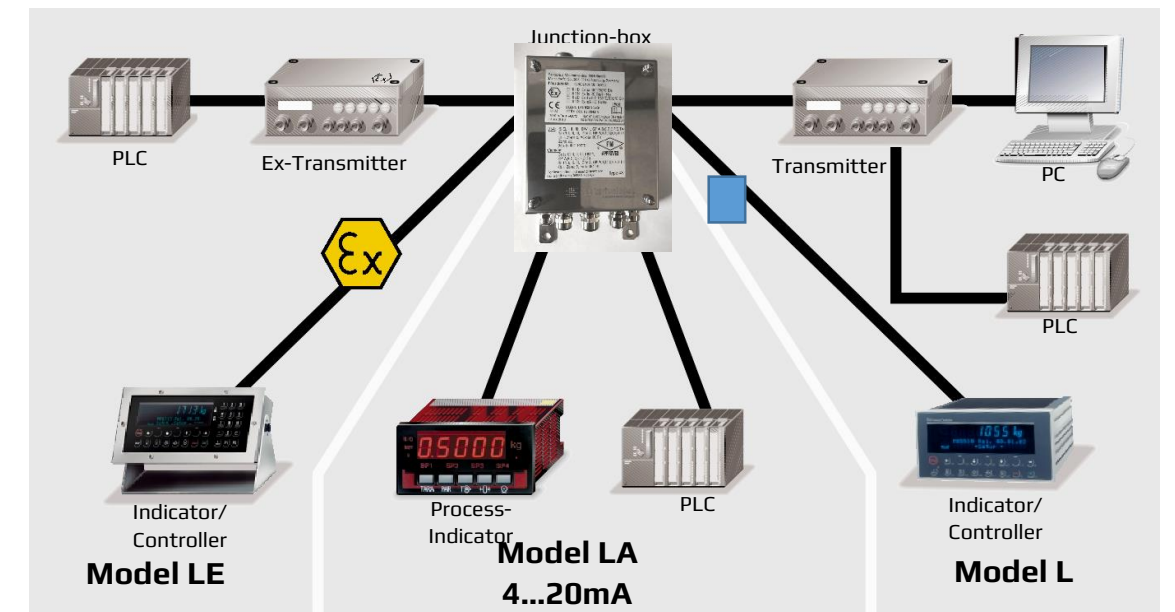
Let SATORIUS configure your system to your specific needs.

The model LA provides 4...20 mA output for direct connection to process instrumentation or PLCs/DCS.



Usually only one PanCake is required (three legs). If two PanCakes are used (4 legs) you still require only one input channel in your PLC or Process Indicator by simply switching the two outputs in parallel.

The model L and LE featuring mV/V output are connected via our vast range of transmitters and indicators.



COMMON LEVEL CONTROL SYSTEMS IN COMPARISON:

The performance of conventional level control instrumentation is rarely better than a glimpse into the tank or a blow with the hammer. Ultrasonic, Radar and many other systems suffer from a wide range of application related

problems: rotating mixer blades, varying shape of material cones and vessels are the stumbling stones of one-dimensional height measurement instead of real content determination. Specific material properties like

particle size, foam, reflection properties, vapor and dust or material sticking to the walls and the equipment add to the complications. In comparison, only PanCake level-by-weight technology provides reliable results.

Measurement method	Solids			Liquids		
	free flowing granular	fine powders / dust	Coarse / lumpy	volatile	foaming	Viscous / Adhesive
Radiometry	+	+	+	+	+	+
Radar	?	?	?	+	+	+
Ultrasonic	?	?	?	?	X	?
Hydrostatic	+	+	X	?	?	?
Displacement	X	X	X	?	?	X
PanCake®	+	+	+	+	+	+

+ = optimal ? = under certain conditions X = not suitable

Source: VDI/VDE 3519, page 1+2.

Application notes and further information available on request.

Over all Source: Sartorius Hamburg GmbH
http://gwt.dk/files/manager/applikationer/pancake_level_cell.pdf



WEIGHING LEVELLING FOOT

FAQ ABOUT WEIGHING LEVELLING FOOT

What do the product consist of?

This product is an Adjustable Hygienic Mounting kits with a built in load cell. It is the only weighing levelling feet in the world with built-in load cell for measuring of fluid level and weighing of products where the load cell is secured, guided and protected inside the foot. It has self-draining surfaces, sealed movable parts and no exposed thread that secures absolute minimum cleaning and maximum product safety.

What is the functional difference to other weighing products?



NGI's weighing levelling feet is a mounting kit adjustable in height and hygienic in design. That's the difference. All other features are the same as other mounting kits that also ads benefit to the weighing cell or sensor.

Is the cell protection against hot water during washing?

The load cell is IP68, IEC 529, equivalent to NEMA 6 and can be submerged in water to a depth of 1.5 m for 10,000 hours. It is a hermetically sealed, welded stainless steel 1.4542 (DIN 17440) construction, filled with polyurethane and inert gas. The foot covers the sensor and protects it against fast heat changes and mechanical impacts. The sealing between spindle and foot is IP Code IP69K: DIN (Deutsches Institut für Normung) 40050-9: Straßenfahrzeuge; IP-Schutzarten; Schutz gegen Fremdkörper, Wasser und Berühren; Elektrische Ausrüstung [Road vehicles; degrees of protection (IP-code); protection against foreign objects, water and impact; electrical equipment]. May 1993. (an English translation of the German original is available from DIN).

What is the value for overloading of sensors?

It is important first of all to select a load cell suitable for the loads. Use transport security lock if overload is a problem during transport.

Foot size		Ø80 and Ø105	125 and up	125 and up
Sensor type		PR 6211 D1	PR 6251 LI LE	PR 6251 LAI LAC
Weighing range		30... 300kg	500kg... 16t	500kg... 16t
Max. usable load	Upper limit for measurements	150%	150%	120%
Max. Load without damage	Highest limit without irreversible effects	500kg	300%	300%

Source: Sartorius Data Sheet.

If the load cell has been exposed to a higher load than "Max. usable load" it is recommended to re-calibrate the equipment.

What if the load on the machine feet is not equally distributed?

It is important that the load on the feet reflects the actual weight of the machine that stands on them, to get the most accurate measurement make sure that the load is uniformly distributed on all feet by adjusting the spindle (see installation). You can also measure the output between the green and gray wire to make sure they reflex the weight on top of them.

What if the weight of the machine is not equally distributed?

Weighing feet on all feet will ensure that everything is measured but if only some feet are with weighing you can use software in the Transmitter, PLC, PC, Indicator, Controller, etc. to handle the load so that it gives the total weight anyway.

What if there is horizontal load involved?

The patented NGI design absorbs horizontal forces (No torque, side shear and temperature changes affect the measurement)

What about electric protection against damage due to overloading, electrical spikes etc.?

Earth connection is not a problem since the cell is protected inside the feet, nevertheless avoid sending current through the foot. Electrical interference may occur from other components, due to loose connections, varying voltage, potential differences, poor shielding, cheap electrical components and so on.

What is the acceptable angle for lateral load on foot?

This is never a problem as it can be calibrated in the equipment the load cell is connected to, but follow recommended angles in the Catalog. When a force is transferred on to a surface at an angle it forms a force diagram, this may in theory lead to wrong measurements, but in praxis a 5-degree angle result in 0.38% less registered force (that still can be calibrated away).

What is lifetime of the foot?

NGI's machine feet lifetime is minimum 20 years. Global Weighing in Denmark has never changed a load cell due to service life. Load cells do not break they get substituted when the wire is cut by accident. Broken wires is the most common failure.

WEIGHING LEVELLING FOOT

FAQ ABOUT WEIGHING LEVELLING FOOT

What reclamation process in company NGI?

See [TERMS OF SALE AND DELIVERY](#) on homepage

Reference where they are used and where we can see them?

This is a new product and we are waiting for permission to use references from customers

What is warranty time and what is covered in warranty?

One year but see [TERMS OF SALE AND DELIVERY](#) on homepage

What is additional equipment for sensors or what electrical equipment is requested?

The load cell sends out 2mV/V or 4-20mA depending on the choice of the cell, this signal can be handled with everything from a simple volt/amp meter or an amplifier to an advanced industrial PC. The solution is up to the designer and the needs of the end-user.

What is process for calibration of sensors after their installation on machine?

When we calibrate our test system consisting of 4 load cells connected to a display, we proceed as follows:

- 1) Install the machine feet so that the pressure is evenly distributed, which means about same torque on the spindle key for lifting. (Can be measured electrically on disconnected output wires)
- 2) Make sure that the spindle is correctly engaged and that the sleeve or counter nut is tightened.
- 3) Run Setup on the display as prescribed in the manual provided by the supplier and then you are ready to see the weight. This last point of the process is probably as diverse as the solutions are many.

Do NGI help and train engineers and technicians in use of weighing cells?

NGI has over 25 years' experience in supporting machines and levelling them. We help our customer to choose the right size, strength, adjustment and design whether it's a plastic foot or an extra strong seismic foot. We do the same with weighing, but we also know that when it comes to handling electrical signals we are no experts and that is why we teamed up with one of the world's leading companies Sartorius now known as Minebea. Sartorius has local suppliers in all countries around the world and is always glad to help you chose the right equipment to handle the signals from the weighing cells.

What is the accuracy?

For the exact accuracy see the data sheet for the weighing cells.

The most crucial factor for precise weighing is that the forces are transferred properly into the load cells. NGI's design combined with the special measuring element geometry in the load cell ensures that the transmission of forces into the load cell is always at the optimum level. This minimizes the disruptive effect on measurement accuracy whilst a high overload range, high repeatability and good linearity are maintained. That also means that the load cell is as accurate as stated in the data sheet (also below) and as external circumstances permit.

Foot size		Ø80 and Ø105	125 and up	125 and up
Sensor type		PR 6211 D1	PR 6251 LI LE	PR 6251 LA
Weighing range		30... 300kg	500kg... 16t	500kg... 16t
Accuracy class	deviation relative to temperature variations	0.05 %	0.5 %	0.5 %
Rated output	relative output at nominal load	2.0 mV/V	2.0 mV/V	16 mA
Tolerance on rated output	permissible deviation from rated output	< 0.25 % Cn	< 4 % Cn	< 4 % Cn
Tolerance on zero signal	load cell output signal under unloaded condition	< 0... 2 % Cn	< 4 % Cn	4 mA
Repeatability error	max. change in load cell output for repeated loading	< 0.01 % Cn	< 0.1 % Cn	< 0.1 % Cn
Creep, during 30 min	max. change in load cell output under nominal load	< 0.03 % Cn	< 0.1 % Cn	< 0.1 % Cn
Non-Linearity	max. deviation from best straight line through zero	< 0.05 % Cn	< 0.25 % Cn	< 0.25 % Cn
Hysteresis	max. difference in load cell output when loading from zero to nominal load and unloading back to zero	< 0.05 % Cn	< 0.15 % Cn	< 0.15 % Cn
Temperature effect (on zero)	max. change of 5 min/10 K D T over BT referred to Cn	< 0.042 % Cn/10 K	< 0.15 % Cn/10 K	< 0.15 % Cn/10 K
Temperature effect (on output)	max. change of C/10 K D T over BT referred to Cn	< 0.03 % Cn/10 K	< 0.1 % Cn/10 K	< 0.1% Cn/10 K

Source: Sartorius Data Sheet

What to do when the machine is vibrating?

When a machine is vibrating - the weight on the display will vary. You can easily make the fluctuations disappear by middling input from the load cells with amplifiers or software in the Indicator/ Controller PLC or PC and in some cases you can just use the signal when the machine is standing still.

What SW/HW do NGI recommend when the machine vibrating?

When a machine is vibratin.....

WEIGHING LEVELLING FOOT SARTORIUS COMPACT LOAD CELL INSIDE



Compact Compression Load Cell PR 6211/.. D1

Compression load cells from 30 kg to 300 kg.
Specially designed for tank and hopper weighing as well
as basic dosing systems.
For use in EX zones 1, 2, 20, 21, 22 and FM DIV 1.

Easy to install in limited space
Full stainless steel construction
Resistant against vibrations
Hermetically welded sealed, IP68 (depth of 1.5m for 10,000 hrs.), IP 69K
Ex-version not available
Integrated overload protection for up to 300kg capacity
Easy corner adjustment by matched D1 load cell outputs
Wide temperature range
Hermetically sealed, IP68 (depth of 1.5 m for 10,000 hrs.), IP69K
W&M approval (acc. OIML R 60)

Description

The PR 6211 range of load cells is specially designed for weighing silos, tanks and process vessels.

The unique design principle facilitates a particularly compact construction and, as a result, the unit can be used even in restricted space conditions. The NGI installation counterbalance movements arising from mechanical or thermal expansion or contraction of the vessel or its supporting construction. In addition, the small construction has integrated overload protection of 500kg.

At the same time, this range distinguishes itself above all for its unmatched reliability, robustness and stability, which enable trouble-free operation without adjustment, year after year.

The hermetically sealed enclosure and special TPE cable allow the unit to be used even under extreme operating conditions in harsh production environments. The entire measurement chain can be calibrated without the use of a reference weight.

Due to "matched output" technology, a damaged load cell can be exchanged without the need for re-calibration. This saves a tremendous amount of time during commissioning. An explosion-proof (Ex) version of this range of load cells is also available, as an option, for use in intrinsically safe environments.

Load cell construction

Hermetically sealed, welded stainless steel construction, filled with Polyurethane.

Material

1.4542 (DIN 17440) acc. to 5604, 5622 (B.S.)

Protection

IP 68, IEC 529 (equivalent to NEMA 6).

The load cell can be submerged in water to a depth of 1.5m for 10,000 hours, IP 69K Rugged, flexible, screened; TPE thermoplastic Elastomere; Sheath: grey; Diameter: 3mm, 4 x 0,13mm²; Length : 3m

<https://www.minebea-intec.com/en/products/load-cells/vessel-and-silo-scales/compact-compression-load-cell-pr-6211/>

MOUNTING KIT FOR LOAD CELLS THE SUPER COMPACT SOLUTION



80 mm



WEIGHING LEVELLING FOOT SARTORIUS PANCAKE LOAD CELL INSIDE



**Minebea
intec**
The true measure

PanCake® Level Sensor PR 6251

The PR 6251 fill-level sensor is specially designed for basic weighing of silos and horizontal tanks. It meets all requirements for years of trouble-free operation without adjustment. For use in EX zones 1, 2, 20, 21, 22 and DIV

Easy mounting
Stainless steel construction
Hermetically welded sealed, IP68 (depth of 1.5m for 10,000 hrs.), IP 69K
Ex-version available (LE)
Direct 4... 20 mA output (LA)
Only 25/35 mm installation height

Description

The PR 6251 range of load cells is specially designed for easy weighing of silos and horizontal tanks. The unique design principle ensures a very compact construction. As a result, existing applications can also be upgraded very easily. The range distinguishes itself above all for its unmatched reliability, robustness and stability, which enable trouble-free operation without adjustment, year after year.

Product profile

Special measuring element geometry ensures that the transmission of force into the sensor is always at the optimum level. This minimizes the effect on measurement accuracy whilst a high overload range, high repeatability and good linearity are maintained. There is a particularly wide working temperature range attributable to special resistance strain gauge technology. The hermetically sealed enclosure and special TPE cable allow the unit to be used even under extreme operating conditions in harsh production environments. The entire measurement chain can be calibrated without the use of a reference weight. A version is also available with a direct output of 4-20 mA. This facilitates easy and cost-effective integration into an existing application. An explosion-proof (Ex) version of this range of load cells is also available, as an option, for use in intrinsically safe environments.

Load cell construction

Hermetically sealed, welded stainless steel construction, filled with Polyurethane.

Material

500 kg... 10 t 1.4021 (DIN 17440), 420 S 37 (B.S.); 16 t 1.4542 (DIN 17440), S 604/S 622 (B.S.), 17-4 PH (Int.)

Protection

IP68, IEC 529, equivalent to NEMA 6. The load cell can be submerged in water to a depth of 1.5 m for 10,000 hours. Robust, flexible, screened
Sheath: Thermopl. Elastomere
Colour: grey (LE: blue, LA/LAC: green)
Diameter: 5 mm, wires 4 x 0.35 mm²
Length: 5 m

Bending radius

Fixed installation: ≥ 50mm; Flexible installation: ≥ 150mm

Certificate of conformity

Approval: II 1G EEx ia IIC T6, II 1D IP65 85°C; Approval No.: PTB 02 ATEX 2059, TÜV 03 ATEX 2301x

<https://www.minebea-intec.com/en/products/load-cells/vessel-and-silo-scales/pancaker-level-sensor-pr-6251/>



MOUNTING KIT FOR LOAD CELLS THE SIMPLE WAY OF WEIGHING

 **PLUG N' PLAY
INSTALLATION**

 **HEIGHT ADJUSTABLE
WEIGHING SENSOR**

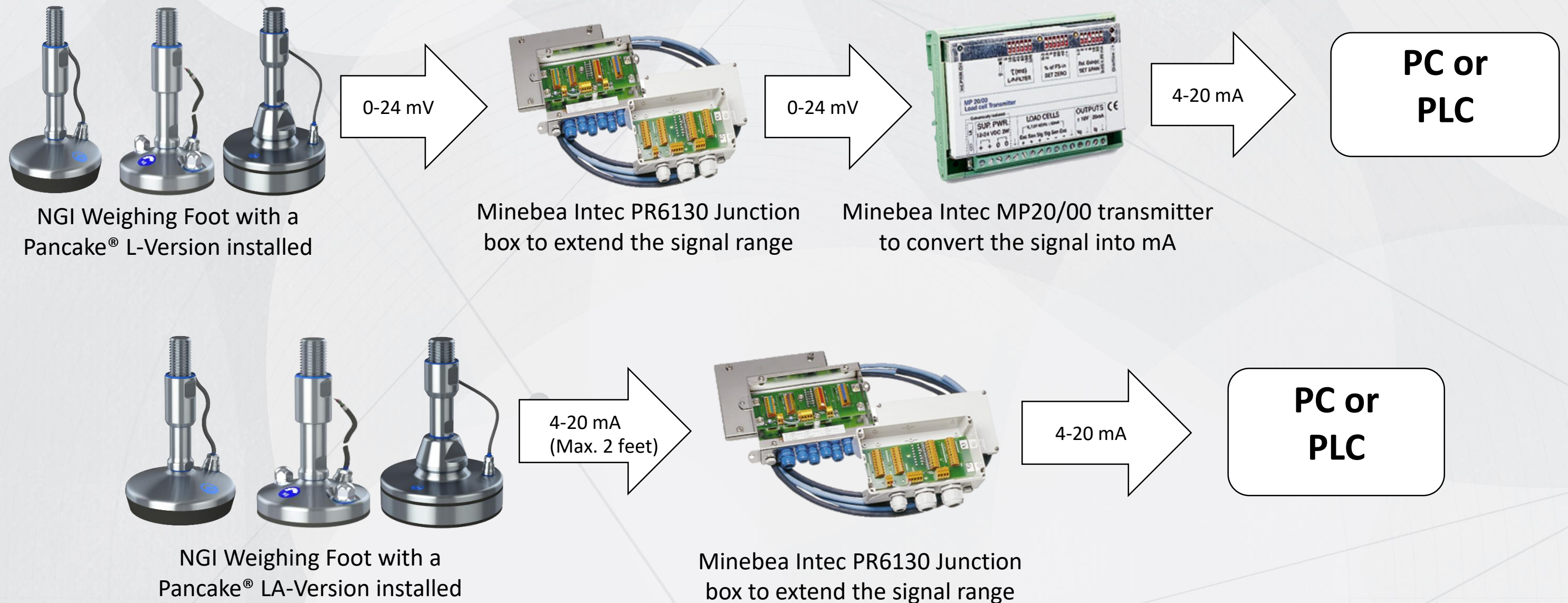


NGI
HYGIENIC LEVELLING SYSTEMS

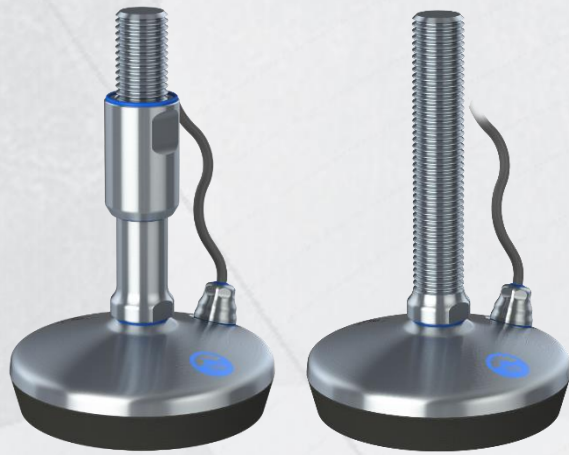
L vs LA on Pancake® Load Cells

The Pancake® loadcell by Minebea Intec offers 2 different versions. The L-Version, outputting a mV-Signal and the LA-Version, outputting a mA-Signal. When more than 1 Weighing feet are used below a tank, or under multiple tanks which are installed in close vicinity, NGI recommends the use of the L-Version in conjunction with a transmitter. The transmitter converts the signal from mV to mA.

The LA-Version already has a transmitter installed in the loadcell, a transmitter is therefore not necessary. However, the LA-Version costs significantly more and it only recommend when a single tank needs to be fitted with these feet.



WEIGHING LEVELLING FOOT INSTALLATION GUIDE



PLUG N' PLAY INSTALLATION

INSTALLATION OF XHSW FOOT ASSEMBLY

This guideline describes how to install our foot assembly onto the machine or component for which it is intended to support.

Prior to installation of the levelling foot ensure that the floor does not exceed maximum slope.

When installing, make sure that the footplate does not span over cracks, grout lines or other floor imperfections. If unavoidable, seal the cavity with bonding material under and around the edge of the footplate.

Lift or jack up the machinery or equipment to install the levelling foot.

Make sure that the sealing is correctly fixed on top of the sleeve. Grease the exposed thread with FoodLube Universal Grease and make sure to remove any excess grease after installation.

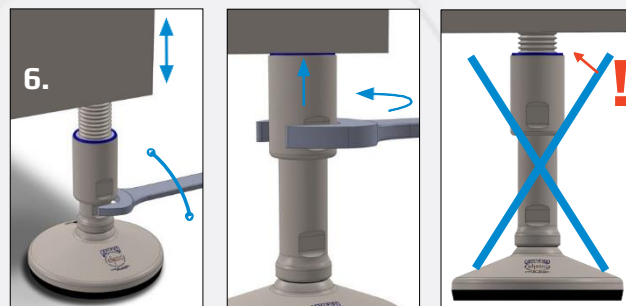
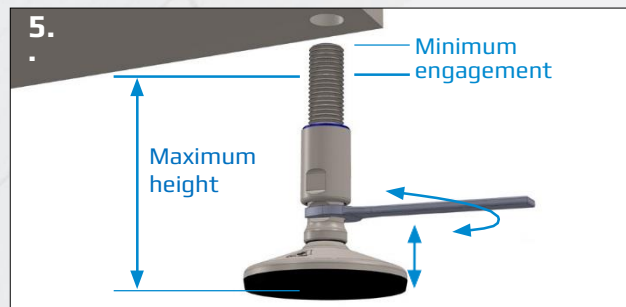
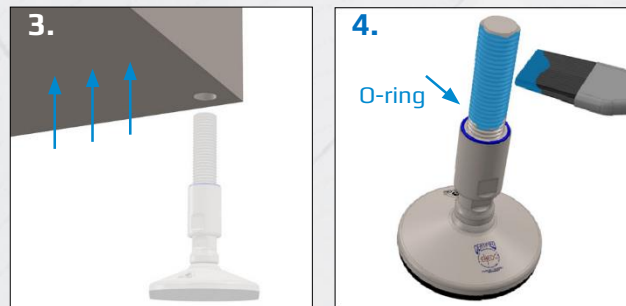
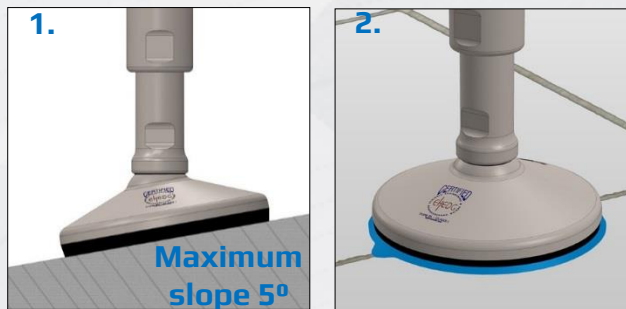
Install the levelling foot and use a wrench to adjust the vertical position and make sure that the engagement is no less than the diameter of the thread.

Repeat step 4-5 for all feet supporting the machinery

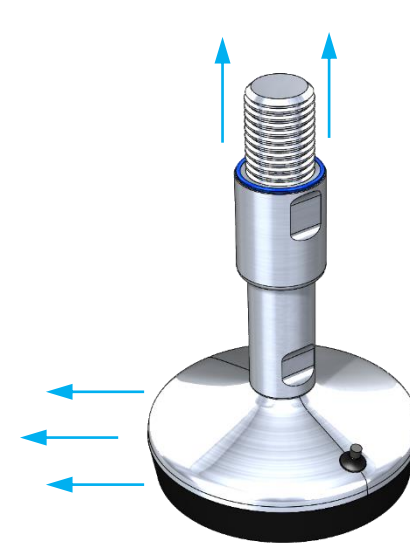
Lower the machinery so that the feet rest on the floor. Perform final height and levelling adjustments if needed and ensure that the load is uniformly distributed on all feet.

Use a wrench to rotate and tighten the sleeve against the machinery or equipment. Make sure that the sleeve is tightened to counter-lock the levelling foot and cover the thread.

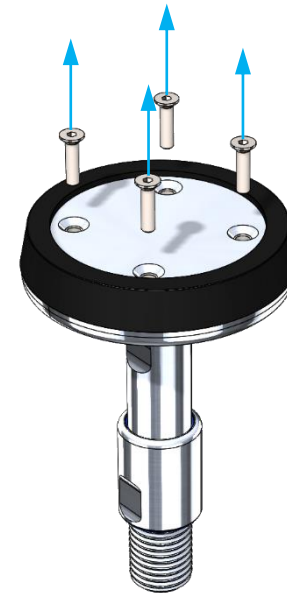
! If the levelling foot is not fully inserted into the machinery or equipment the thread will become partly exposed. In this case, it is not correctly installed and will neither meet 3A, USDA & EHEDG hygienic demands nor load specifications.



WEIGHING LEVELLING FOOT SERVICE AND ACCESS TO THE LOAD CELL



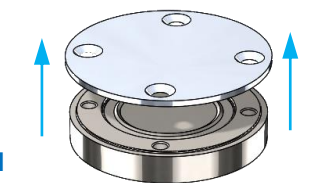
1
Lift the machine
When the machine is lifted unscrew the levelling foot.



3
Unscrew weighing fasteners
The fasteners are secured with Loctite so they may be a little difficult to unscrew.



2
Remove rubber
The center rubber is easy to remove by pulling it off the bottom plate.







4
Pull out load cell
It is now possible to pull out the load cell, but if it is stuck just screw 2 fasteners a bit in the load cell and use them as handles to pull it out.

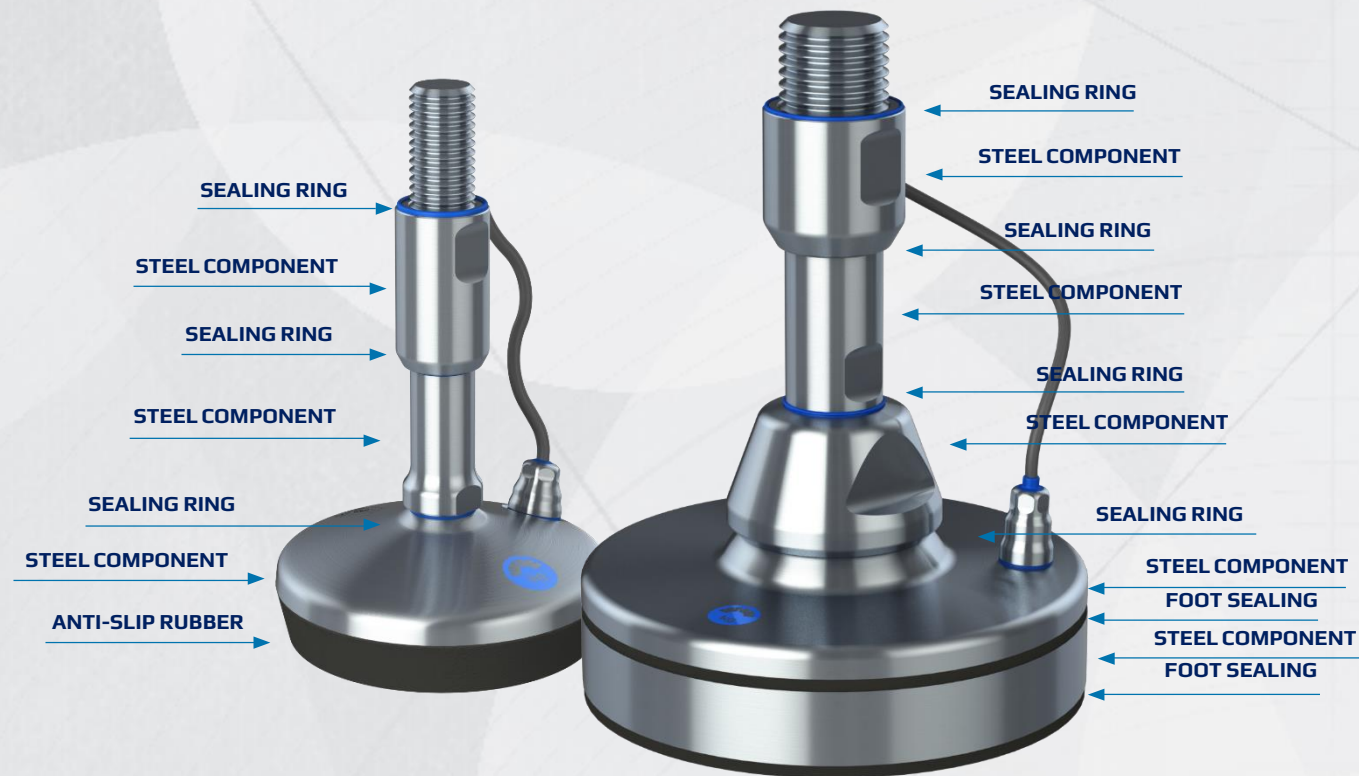


! **NB: When assembling**
When assembling the weighing levelling foot again. Tighten the screws until the load cell presses against the pressure tap and then release them a bit. It is important to use Loctite secure the screws.

WEIGHING LEVELLING FOOT CLEANING AND MAINTANANCE

TYPE: XHSW, XHTSW, XHGSW & XHJSEW

-  CERTIFIED
HYGIENICS
-  MINIMIZED
CLEANING TIME
-  MINIMIZED
WATER USAGE
-  WEIGHING
CELL INSIDE



MAINTENANCE

If the sealing on the sleeve is damaged it must be replaced. Always use genuine spare parts from NGI.

If the sealing between the foot and the spindle is damaged, replace the whole levelling foot and install a new one. An assembled levelling foot cannot be disassembled.

Load on the levelling foot must be obtained in order for the footplate to be hygienically sealed to the floor.

A levelling foot with floor fixing must always be tightened as specified in the installation manual. Tighten if necessary.

If replacement of nuts or washers is necessary always, use genuine spare parts from NGI. If any adjustments are necessary, the levelling foot and the nearest surroundings must be cleaned carefully to prevent any soil from entering the sleeve.

CLEANING

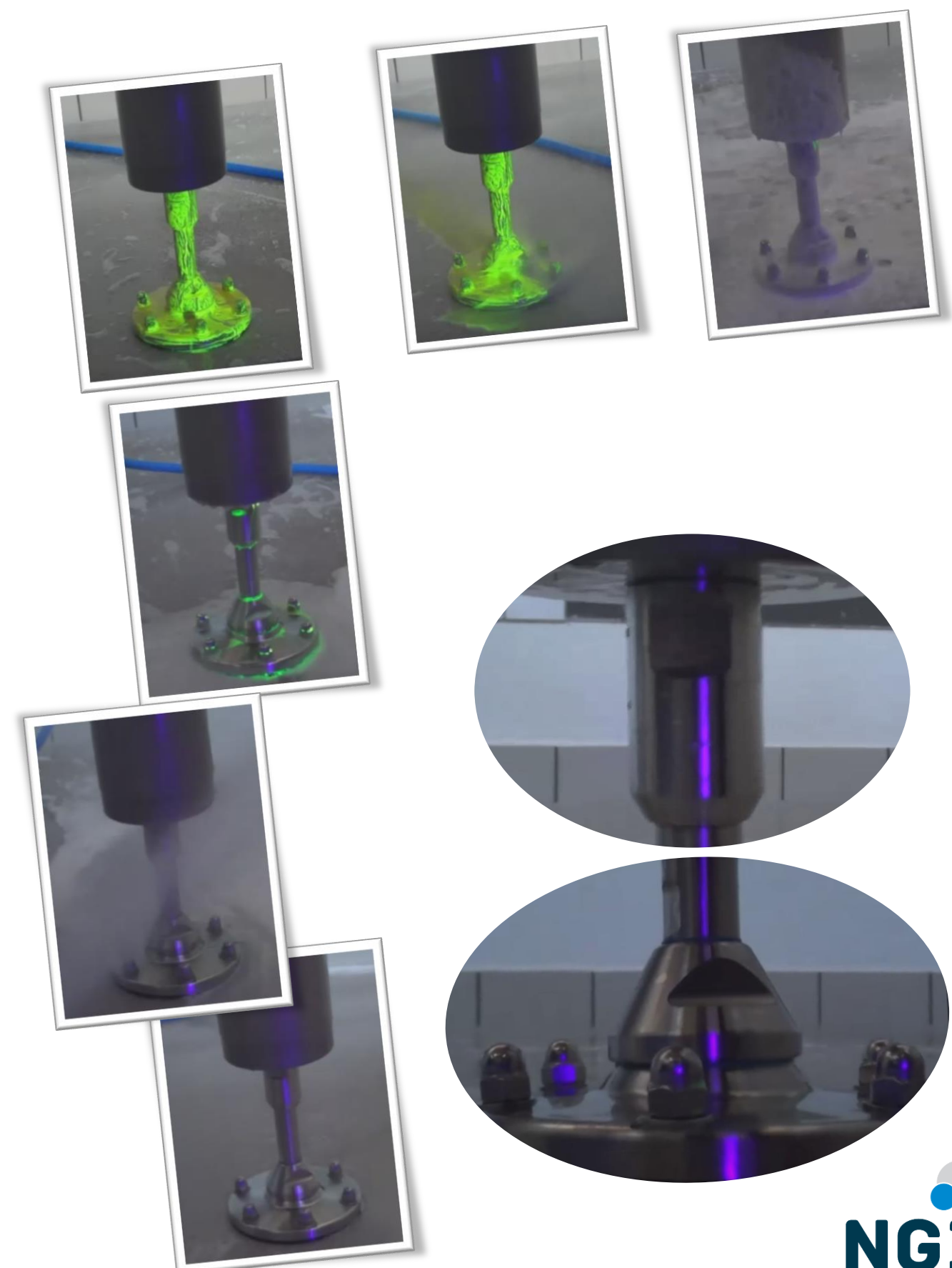
Rinse with water (maximum temperature ~40°C on proteins).

Distribute and cover all surfaces with foaming alkaline detergent for minimum 10 minutes. All standard products within the industry can be used. Follow supplier recommendations for temperature (maximum 100°C) and concentration depending on foaming detergent.

Rinse with hot water (maximum 100°C) with low medium pressure (approximately 8-12 bar) until it is visibly clean. Cleaning of the levelling foot including sealing and dome headed nuts can normally be done with a spraying nozzle pointing in a downwards direction approximately 45°. For heavy duty cleaning a more direct-oriented nozzle can be necessary. Be careful not to damage the sealing if high pressure cleaning is used. Keep nozzle at minimum 200-300mm distance.

Mechanical cleaning may be necessary if the levelling foot is severely soiled. Cleaning must be executed with a soft brush or soft plastic scraper together with a more direct pointing nozzle spray. Steel scraper, steel brush or other sharp metallic tools are strictly prohibited, since the sealings can be severely damaged and the steel surfaces will be scratched.

WEIGHING LEVELLING FOOT CLEANING TEST XHGSW & XHJSEW







WEIGHING LEVELLING FOOT DECLARATION OF CONFORMITY

NGI A/S fundamentally adheres to all applicable directives and standards. All information is based on the current state of knowledge and is subject to change. We attentive follow the revisions/amendments to these directives and will design our products accordingly. This ensures that products from NGI A/S are always in compliance with currently valid requirements.

Our type of products is not covered by the scope of application of the EC directive on machinery. For this reason, they cannot be furnished with the CE marking in accordance with the EC directive on machinery.

NGI A/S, Virkelyst 5-7, 9400 Nørresundby, hereby declare that the listed materials applied for the products comply with the demands for materials used within the food and pharmaceutical industry.

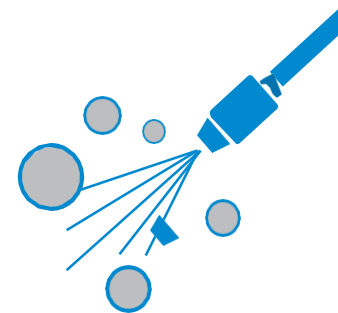
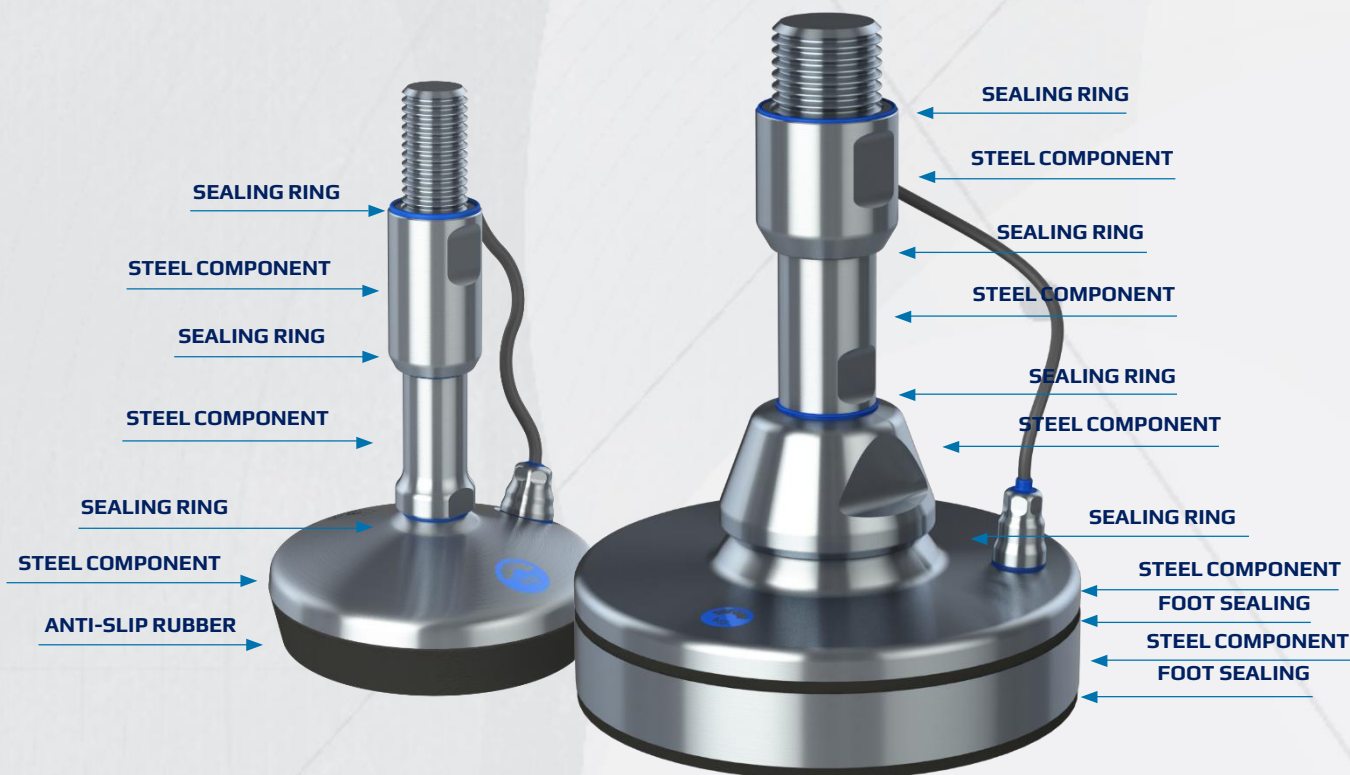
Furthermore, we declare that the listed materials applied for the products comply with the demands for materials used within the food and pharmaceutical industries.

-  CERTIFIED
HYGIENICS
-  MINIMIZED
CLEANING TIME
-  MINIMIZED
WATER USAGE
-  WEIGHING
CELL INSIDE



 PLUG N' PLAY
INSTALLATION

 HEIGHT ADJUSTABLE
WEIGHING CELL
ADJUSTABEL



WEIGHING LEVELLING FOOT DECLARATION OF CONFORMITY

Materials, Surface Roughness and Geometry

Metallic surfaces are constructed from Stainless steel, AISI 304/A2 or by request Stainless steel, AISI 316/A4 and are corrosion resistant under the specified conditions of use including those of cleaning.

The elastomeric components are constructed from FDA approved NBR and silicone material. All materials used are considered non-toxic and are non-absorbent.

All exposed metallic surfaces are finished to maximum surface roughness values of 1.6 µm Ra. All elastomeric components and sealing washers are left as molded with no hand trimming and all surfaces are considered smooth enough to ensure that cleaning is easy.

There are no exposed dissimilar metal-to-metal contact areas in the construction where galvanic corrosion could occur.

Sealing designs permit access for easy cleaning with no inaccessible pockets or crevices.

There are no risk of exposed threads and no unsealed metal-to-metal joints in the finished construction.

All exposed surfaces have a smooth finish such that soil may be cleaned from the surface using manual cleaning techniques and be free of pits, folds, cracks, crevices, and other imperfections in the final fabricated form.

Drain-ability and Installation

The units are designed to be self-draining and contain no horizontal ledges.

Comprehensive instructions are provided containing detailed information to ensure compliance with the 3-A and EHEDG design criteria, when the product is certified.

The 3-A Sanitary Standard 88-00 requires that when machine leveling feet or supports are properly mounted on the equipment, they shall provide a minimum clearance between the lowest part of the equipment and the floor of not less than 4.0 in. (102 mm) if the equipment outlines an area in which no point is more than 12.5 in. (318 mm) from its nearest edge. If the equipment outlines an area in which any point is more than 12.5 in. (318mm) from its nearest edge the clearance shall be at least 6 in. (152mm).

The EHEDG guideline recommends a minimum clearance between the equipment and the floor or wall of 300mm for easy cleaning and inspection.

When fasteners are required, only domed head screws and dome headed nuts must be used. The exposed interfaces shall be sealed with sealing washers and there must be no threads exposed in the installed configuration of the machine feet.

WEIGHING LEVELLING FOOT DECLARATION OF CONFORMITY

Maintenance and Cleaning

Foot bases can be sealed to the floor if required. The instructions make recommendations not to span over floor imperfections or grout lines without the addition of proper sealing compounds.

Maximum torque values are specified as appropriate on fastening arrangements to avoid over-compression of sealing washers and gaskets.

Maintenance instructions are clearly defined and prohibit the use of non-genuine replacement parts.

Cleaning instructions describe typical cleaning procedures with recommended maximum temperatures/pressures and stipulate the use of non-abrasive cleaning aids.

The design does not contain dead spaces and avoid accumulation of soil, microorganism's insects and other vermin in areas which cannot be easily cleaned.

Adhesives and lubricants

Sealing and thread locking compounds used in the construction are non-toxic in the cured state.

No lubricants, insulation material or signal transfer liquids are used in the construction.

Standards and directives

EN 1672-2:2005 Food machinery / General design principles/Part 2: Hygiene requirements.

EN ISO 14 159 2004 Safety of machinery – Hygiene requirements for the design of machinery.

Document 13 EHEDG guideline on the hygienic design of apparatus for open processes.

Similar NGI designs meets the criteria for Hygienic Equipment Class I for components situated in the non-food area and are accessible for easy cleaning without dismantling.

The weighing levelling feet design is according to 3-A Sanitary Standard for Machine Leveling Feet and Supports.

Certified according to USDA Guidelines "Dairy Equipment and NSF ANSI 3-A 14159-1-2014" for the sanitary design and fabrication.

New Zealand seismic standard NZS 4219 (Only XHJSEW).



IN CONFORMANCE WITH NZS 4219; NZS 1170.5

NEW ZEALAND

EU regulations

852/2004 on the hygiene of foodstuffs.

853/2004 specific hygiene rules for food of animal origin.

854/2004 specific rules for the organization of official controls on products of animal origin intended for human consumption.

1935/2004 on materials and articles intended to come into contact with food



WEIGHING LEVELLING FOOT DECLARATION OF CONFORMITY

The declaration of materials concerns the following applications:

Application: STEEL COMPONENTS

Material type: Stainless steel, AISI 304/A2 (X5CrNi18-10), Euro norm 1.4301.

By request: Stainless steel, AISI 316/A4 (X 5 CrNiMo 17 12 2), Euro norm 1.4401

Compliance: EN 10204 Type 2.2. NGI A/S states that the product is in compliance with the order with indication of results of nonspecific inspection. NGI have EN 10204 type 3.1 inspection certificates on all material used in the products but not specified for each foot.

In the directive 94/9/EC, Equipment for potentially explosive atmospheres, also known as the ATEX directive, equipment without its own potential source of ignition are not covered, nor shall be marked according to the directive. However, NGI levelling feet are suitable for use in all ATEX zones.

Application: VULCANIZED ANTI-SLIP RUBBER FOOT BASE (for 0-5 ton)

Material type: NBR (NNF-75)

Color: Black

Hardness: 72 ± 3 Shore A DIN 53 505

Range of temperature: Min -35°C to Max +110°C

Compliance: REACH: In accordance with regulations EC 1907/2006.

Candidate List of Substances of very High Concern (16.06.2014). Substances listed in Annex XIV (14.08.2014). Substances listed in Annex XVII (08.05.2014).

RoHS & RoHS 2: In accordance with the directive 2002/95/EC OF EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 27 JANUARY.

ADI free: Do not contain any substances originating from humans or animals.

Bisphenols: Do not contain Bisphenols as described in 1895/2005/EEC. Nor BPA, BADGA, BFDGE or NOGE.

ODS: Do not contain zone depleting substances. In accordance with the Regulation EC 1005/2009 OF EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 16 SEPTEMBER 2009 and Regulation EC 2037/2000 OF EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 29 JUNE 2000.

Conflict Materials: In accordance with US Law: "Dodd Frank Wall Street Reform & Consumer Protection Act", sec. 1502, of 21.07.2010.

GMP: Good manufacturing process in accordance with 2023/2006 EC.

Hazardous Materials: Do not contain any hazardous substances as described in the Hong Kong International Convention for the Safe and Environmental

Sound Recycling of ships, 2009.

Phthalates: Do not contain phthalates.

FDA: Guideline 21 CFR 177.2600

Application: FOOT SEALING (for 0-16 ton)

Material type: NBR. By request EPDM

Electrically: Non-conductive

Chemical resistance: High to commonly applied cleaning agents

Color: Black

Hardness: Shore A 80 ± 5

Range of temperature: Min -20 °C to Max 110 °C

Load:

Low load capacity

Application: SEALING RINGS.

Material type: Silicon rubber

Electrically: Non-conductive

Chemical resistance: High to commonly applied cleaning agents

Color: RAL 5010 (blue)

Hardness: Shore A 60 ± 5

Range of temperature: Min -60°C to Max +200 °C

Storage: According to ISO 2230

Compliance: FDA: Guideline 21 CFR 177.2600

RoHS 2: In accordance with the Directive 2011/65/EU OF EUROPEAN PARLIAMENT AND OF THE COUNCIL.

GMP: Good manufacturing process in accordance with 2023/2006 EC.

