nVent | HOFFMAN

We connect and protect

Enclosure Solutions for Food & Beverage

nVent.com/HOFFMAN

Table of contents

Introduction | Hygiene control

nVent HOFFMAN range of hygienic design enclosures is designed for customers in the food & beverage and pharmaceutical industries, as well as operations in other sanitary environments requiring utmost cleanliness. The fundamental reason for choosing hygienic design (HD) is prevention of product contamination, that could lead to manufacturer liability issues.

A safe manufacturing environment requires that vital industry processes are in place; those involve plant and equipment cleaning and sanitation that prevent cross-contamination with chemicals, microbiological agents and foreign particles. Equipment with poor hygienic design allow bacteria and debris they feed on to build up and are difficult to clean and sanitize. Hygienic design makes carrying out these tasks easier and more efficiently.

nVent is a member of the European Hygienic Engineering and Design Group (EHEDG,) an organization that promotes food safety by improving hygienic engineering and design in all aspects of manufacturing.

HD enclosure manufacturing mandates the use of specific materials and particular design features for easy cleaning, such as lack of areas or crevices where liquid or debris could build up. Stainless steel, the industry standard surface material is smooth, non-porous, non-absorbent, free of cracks and crevices, abrasion-resistant, non-toxic, non-tainting, corrosion resistant, inert to the product, non-reactive to detergents and disinfectants, durable, and maintenance-free. Gaskets are manufactured from silicone; this material is suitable for a wide range of temperatures, waterproof, and is highly resistant to chemicals.

Strict hygienic standards are critical to help ensure that products are safe for human consumption, and free from contaminants and cleaning chemical residues.

> *"After the recognition of germs as causative agent of diseases, the significance of hygiene developed rapidly and is now considered as the cornerstone of safe food production."*

Handbook of hygiene control in the food industry, H.L.M. Lelieveld.

Overview | Hygienic design enclosure ranges

The nVent HD enclosures comply with the strictest food & beverage and pharmaceutical industry health and safety requirements. They allow for thorough, fast and easy cleaning, including high-pressure and high-temperature water.

The hygienic design product ranges comprise enclosures with a high degree of and smooth surfaces without any gaps. The enclosures have self-drainable smooth-finished surfaces, sloped tops and special HD locks/bolts. Each enclosure body and door/cover are made in AISI 304 stainless steel.

Proper sealing is secured by an all-round removable blue silicone gasket, which is resistant to aggressive cleaning products. A set of specific HD accessories is available, including cable glands, wall mounting brackets and levelling feet. The HD product ranges are certified for ingress protection IP 66/69 which makes it possible to use high-pressure and high-temperature water for cleaning.

Features of HD enclosure ranges at a glance:

- Comply with hygiene standards EN 1672-2 and ISO 14159, directive on machinery 2006/42/EU, and hygienic design guideline EHEDG 13;
- IP66 and IP69 ingress protection certified according to IEC 60529 for high-temperature and high-pressure water cleaning;
- IK08 impact-resistance rating according IEC 62262;
- Sloped surfaces allow liquids to self-drain;
- One-piece silicone gasket provides a continuous seal between enclosure and door;
- Blue FDA-approved silicone to clearly distinguish foodstuffs;
- Special locks for self-draining;
- Concealed door hinges inside enclosure avoid accumulation spots;

Product information HDW range

Technical information

The nVent HOFFMAN HDW range is designed and constructed with special materials for highly sanitary operation and ease of thorough cleaning.

Material:

Body: 1.5 mm. Door: 2 mm. AISI 304L pre-grained stainless steel.
Mounting plate: 2 mm galvanized steel.

Body:

Folded and seam welded. The top of the body is equipped with a sloping roof at an angle of 30 degrees towards the front, ending with a 30 mm overhang to avoid any draining liquids from dripping onto the gasket and the door.

Door:

Corner formed in one piece with a sloping angle of 8° on all sides. Surface mounted with 120° opening. Concealed hinges with captive pin. Can be mounted to give left or right hand opening (machining is not required).

Internal hinge:

The door hinge has been especially designed to fit concealed inside the enclosure once the door is closed, avoiding dirt deposits that would accumulate if it were outside, thus making the enclosure easy to clean.

Gasket:

Sealing is ensured by an all-round one piece removable blue silicone gasket.
The silicone is FDA 21 CFR 177.2600 compliant.

Lock:

HD lock made of stainless steel AISI 316L with blue silicone gasket, the lock conforms with norm DIN EN 1672-2:2009.

Mounting plate:

Fixed onto M8 studs welded on the rear of the enclosure. All sides from 800 mm and above are strengthened by folded edges. The mounting plate is marked vertically at 10 mm intervals for easy horizontal positioning of equipment.

Cable access:

No gland openings as standard to avoid hygiene risks.

Protection:

Corresponds with IP 66/69 | TYPE 4X, 12, 13 | IK08.

Approvals:

CE, UL

Finish:

400 pre-grained stainless steel, polished to Ra < 0.8µm.

Delivery:

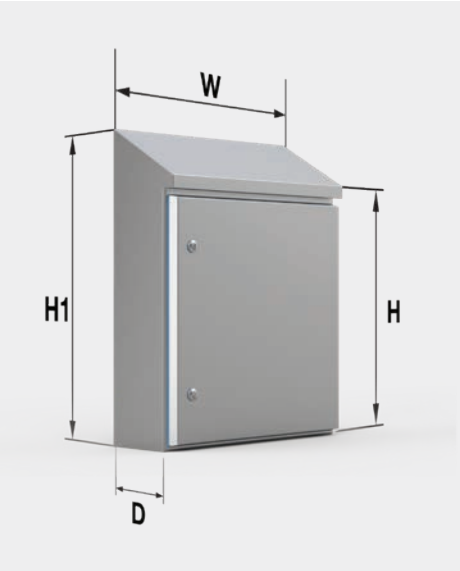
Enclosure with door, mounting plate, metallic key and mounting accessories.

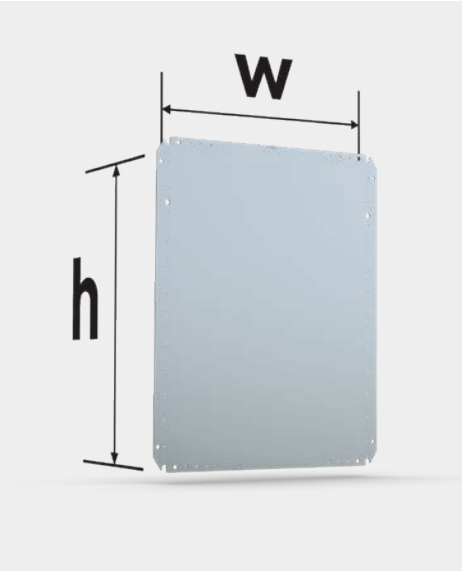
Product information HDW range

Dimensional table

Ordering information

H	H1	W	D	h	w	Item no.
350	442	220	155	350	160	HDW0442215
430	552	390	210	430	330	HDW0553921
430	553	810	210	430	750	HDW0558121
430	605	610	300	430	550	HDW0606130
550	672	510	210	550	450	HDW0675121
650	772	390	210	650	330	HDW0773921
650	772	610	210	650	550	HDW0776121
650	825	810	300	650	750	HDW0828130
1050	1225	810	300	1050	750	HDW1228130
1250	1425	810	300	1250	750	HDW1428130

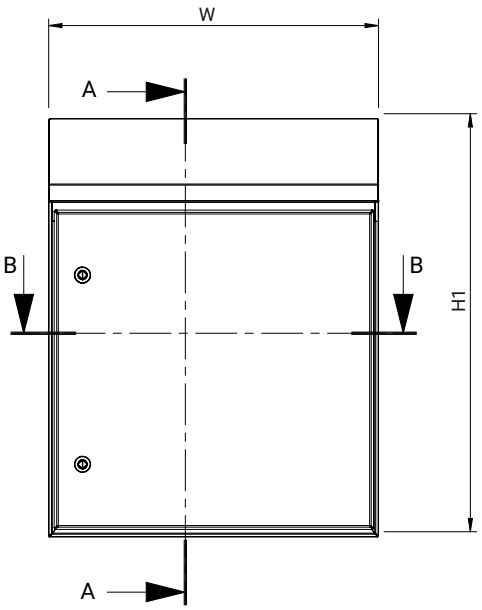




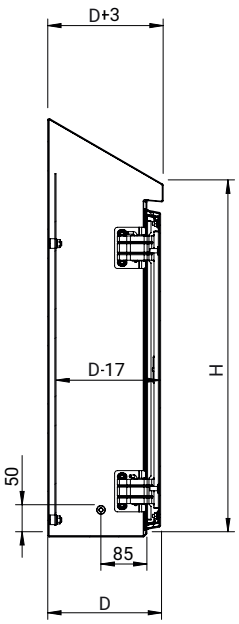
Product information HDW range

Dimensional drawing

Front view

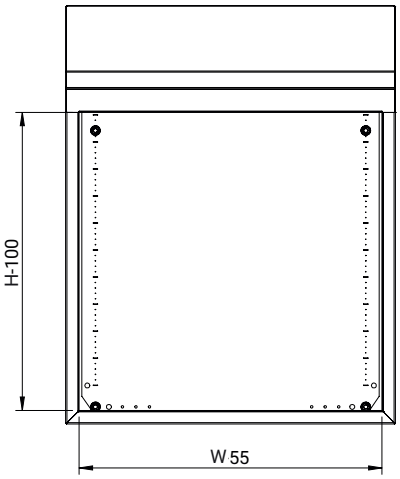


Sectional side view

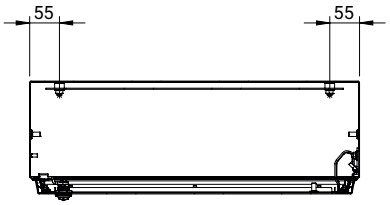


SECTION A-A

Inside enclosure view

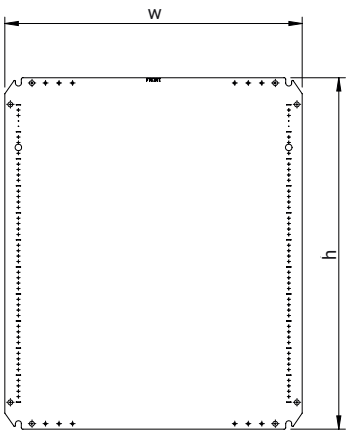


Sectional top view

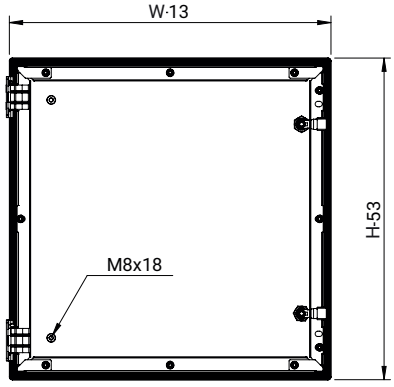


SECTION B-B

Mounting plate view



Inside door view



Key features HDW range

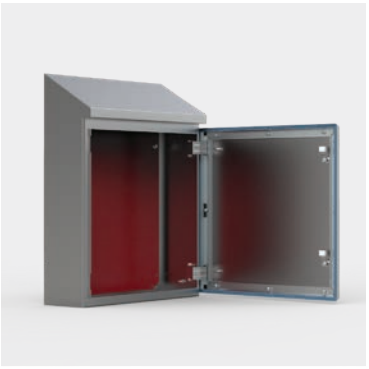
General features

30 Degree sloped roof

- Self draining
- Easy to hose clean
- Integrated 30 mm overhang

Smart hinge design

- Completely hidden inside enclosure when closed
- Reversible - to swap door for left hand open without machining



Mounting plate

- Supplied with the enclosure
- Galvanised steel 2 mm thick

Multiple earthing studs

- In the door
- In the enclosure
- Simplifies wiring

Blue silicone gasket

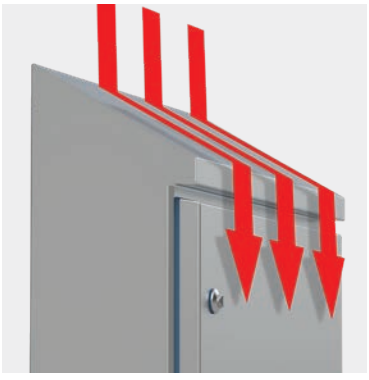
- One piece gasket easy to remove for cleaning or replacement
- FDA certified for food production areas
- Blue color makes any contamination easily visible

Hygienic lock

- Special hygienic locking system
- Self-draining design

Key features HDW range

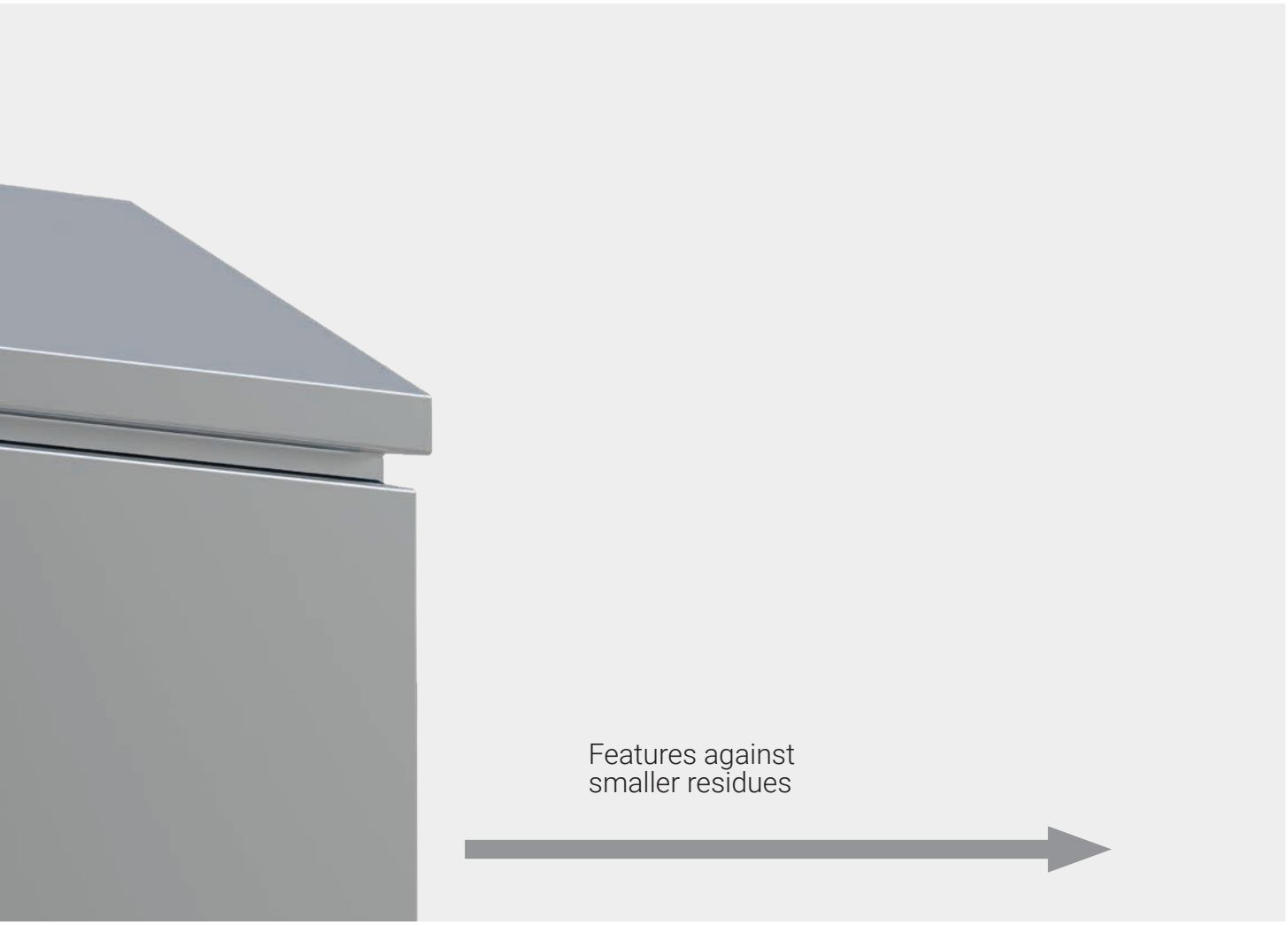
Features against residue accumulation

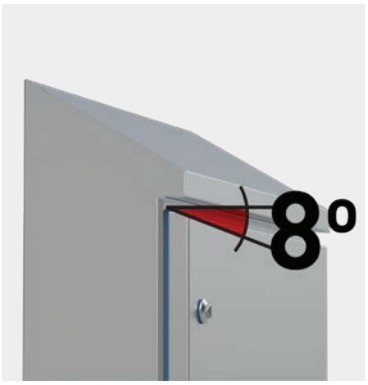


30° sloped roof

30 mm roof overhang

Hygienic lock





8° sloped door edge

Gapless sealing

Surface finish

Product information HDTB range

Technical information

The nVent HOFFMAN HDTB range is designed and constructed with special materials for highly sanitary operation and ease of thorough cleaning.

Material:

AISI 304L pre-grained stainless steel. Body and cover: 1.5mm.

Body:

Folded and seam welded. Four M6×13 studs for bottom profile/mounting plate fixation.

Cover:

Folded and seam welded. Sides sloped at 3°.
AISI 316 HD bolts with blue silicone gasket included.

Gasket:

A one-piece removable silicone gasket with molded corners helps ensure proper sealing, and makes removing and replacing it faster and easier for cleaning and maintenance operations. The silicone is FDA 21 CFR 177.2600 compliant.
Color blue (RAL 5010).

Cable access:

No gland openings as standard to avoid hygiene risks.

Protection:

Corresponds with IP66/69 | TYPE 4X, 13 | IK08.

Approvals:

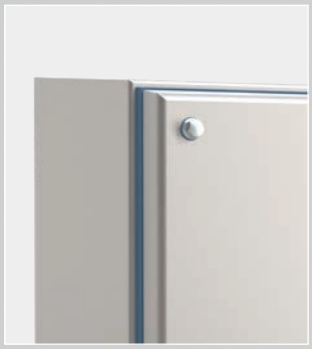
CE, UL

Finish:

400 pre-grained stainless steel, polished to Ra < 0.8µm.

Delivery:

Body with cover and mounting accessories.

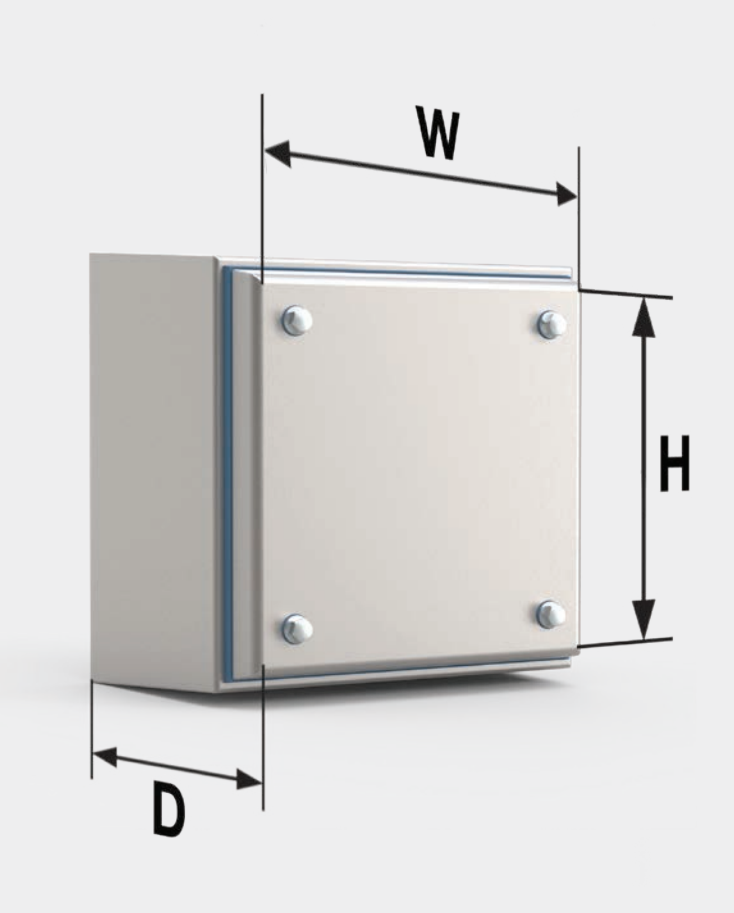


Product information HDTB range

Dimensional table

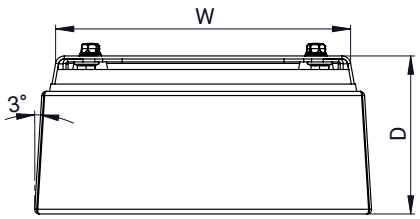
Ordering information

H	W	D	Item no.
150	150	80	HDTB151508
150	150	120	HDTB151512
200	200	120	HDTB202012
200	300	120	HDTB203012
200	400	120	HDTB204012
300	400	120	HDTB304012

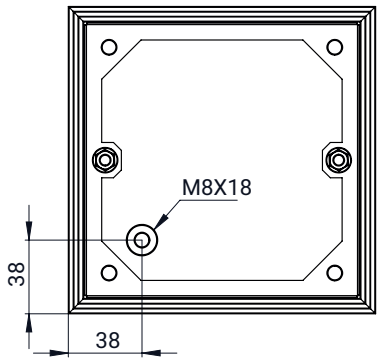


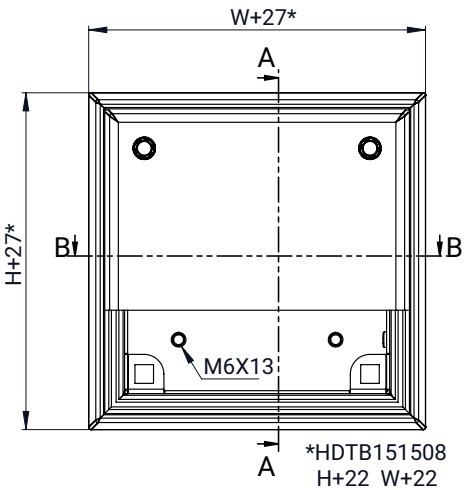
Product information HDTB range

Dimensional drawing

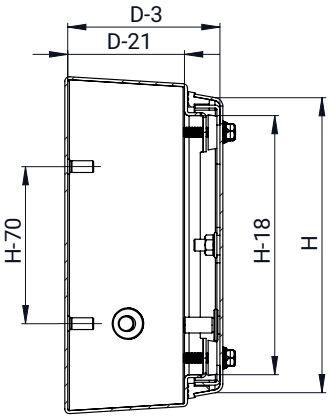


Inside cover view

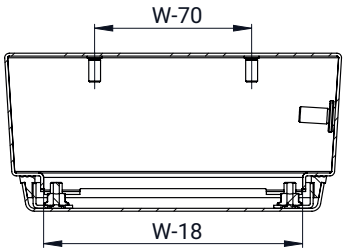




Sectional side view

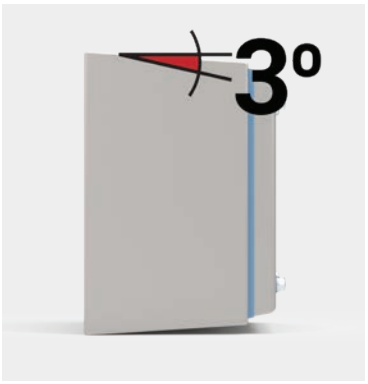


Sectional top view



Key features HDTB range

Features against residue accumulation



3° sloped sides

Hygienic bolts

Gapless sealing

Surface finish

Cable glands HD, CGHD

To place cables inside HD enclosures special cable glands must be used, which are designed to meet strict hygiene demands. The use of standard cable glands increases the hygiene risk due to the presence of external threads, dead spaces and gaps. Consequently, always use hygiene conform cable glands on the HD enclosure.

Description	Pack qty.	Item No.
M12 × 1.5	5	CGHD12
M16 × 1.5	5	CGHD16
M20 × 1.5	5	CGHD20
M25 × 1.5	5	CGHD25

Wall mounting brackets HD, AWHD

The AWHD050/300 wall mounting brackets are made according to hygienic design requirements EN 1672-2:2009. The body is made of AISI 304 stainless steel. The material of blue silicone washers is FDA 21 CFR 177.2600 compliant.

Wall mounting brackets permit HD enclosures to be mounted on a vertical wall and provide a space between the wall and the enclosure to facilitate cleaning. They come with special blue silicone sealing washers to guarantee the IP rating and maintain the hygienic design. They have a round cross-section, and are self-draining. Wall mounting brackets are available in two sizes AWHD050 (having 50 mm length) or AWHD300 (having 300 mm length).

Description	Pack qty.	Item No.
Wall separation: 50 mm	1	AWHD050
Wall separation: 300 mm	1	AWHD300

Levelling feet HD, LFHD

The HDW enclosures can also be mounted on the floor by using hygienic design levelling feet.

The HD levelling foot is certified according to the 3A hygienic standard: “88-00” and certified according to the EHEDG hygienic standard TYPE EL - CLASS 1.

The HD levelling foot admits slopes up to 10° of floors and equipment. The HD levelling foot is marked with the 3A and EHEDG logo.

Description	Pack qty.	Item No.
Levelling feet HD	4	LFHD04

Protective Fan Cover HD, ECHD

Designed for the food & beverage industry with special materials for harsh sanitary operations, this cover helps protect filter fans in wash down environments against water ingress. With the shroud fitted in place, EF filter fans increase in rating from IP 54 to IP 56. The cover can be easily removed for maintenance operations and gasket replacement, and also can be opened to a 35° angle for easy filter cleaning. The sloped-top cover prevents liquids and other debris from pooling. Folded and seam welded. (Machining is required).

Description	Pack qty.	Item No.
Protective cover HD, 230×150×57	1	ECHD10
Protective cover HD, 260×176×57	1	ECHD20
Protective cover HD, 330×233×57	1	ECHD22
Protective cover HD, 390×282×95	1	ECHD30
Protective cover HD, 480×350×110	1	ECHD50
Protective cover HD, 480×350×160	1	ECHD70

HD enclosures advantages and benefits

The features of the HD enclosures include the following advantages:

- Gasket is removable for easy maintenance and replacement;
- No pre-drilled mounting holes or gland plates, bacteria cannot accumulate;
- Easy to clean by high-temperature and high-pressure water;
- Optional accessories to adapt enclosure to specific needs;
- Available as standard off-the-shelf.

The nVent HOFFMAN HD enclosures are designed and constructed with carefully selected materials for highly sanitary operation and ease of thorough cleaning. HD enclosure ranges comply with high cleanliness requirements and minimize hygiene risks with their self-draining, smooth-finished surfaces and gap-free design.

With these new enclosures installed, cleaning time can be reduced for maintenance, thanks to the silicone sealings and self-drainable surfaces. Component failure and unnecessary downtime are avoided as water and dust are prevented from entering the enclosure, even when cleaning with high-pressure and high-temperature water.

In summary, the hygienic design enclosure ranges, bring several benefits in environments where high cleanliness is required:

- Thorough cleaning is fast and easy;
- High-pressure and high-temperature water can be used;
- Hosted equipment and components are well protected from liquids and dust;
- Compliance with hygiene standards.

Cleaning information

Removing residues

Residues include soils and deposits originating from the ingredients used in the preparation of a product.
There are different types: fats, oils, greases, proteins, starches, lime scale, corrosion deposits, algae, and fungi.
Each is chemically different and requires different cleaning methods.
After a gross clean, a major phase of a general cleaning procedure is based on the application of water and detergent to remove and carry away soils and deposits.

Soils
A general definition of soil could be that of unwanted matter on the surfaces to be cleaned, being the primary source of this matter the foodstuffs that are processed at the plant. Examples of soils are: proteins, fats, sugars, starches, and salts.

Detergent
A detergent's function is to remove soils. The ideal detergent to employ depends on the enclosure surface, variation of residues, water hardness, temperature of the cleaning method and safety. No detergent is capable of removing all types of soils, as the solubility of soils is different in water, acid or alkali medium, hence the nature of the soil must be known before selecting the most adequate detergent. Alkaline cleaners are selected for dissolving fat-based or protein-based soils, while acid cleaners are chosen for removal of limestone or other minerals and salts. Surfactants can remove residue by bringing it in suspension in water and making it flushable.

On the use of water
Water plays a key role in the cleaning process, as it carries the detergent or the sanitizer to the surface and carries soils or contamination from the surface. It must be potable and pathogen free. Water hardness is the most relevant chemical property of water affecting the efficiency of the process, as it may affect the properties of the residues on the surfaces, making it more difficult to remove.

Sanitization

A sanitization phase follows the removal of residues.
Sanitization refers to the reduction of micro-organisms to levels considered safe from a public health perspective.
General types of sanitization include thermal and chemical sanitization.

Thermal sanitization
This involves the use of hot water or steam for a specified temperature and contact time:

- **Hot water**
  The primary advantages of hot water sanitization are that it is relatively inexpensive, easy to apply, and readily available, generally effective over a broad range of microorganisms, relatively non-corrosive.
- **Steam**
  The use of steam as a sanitizing process has limited application. It is generally expensive compared to hot water alternatives and it is difficult to regulate and monitor contact temperature and time. Further, the by-products of steam condensation can complicate cleaning operations.

Chemical sanitization
This involves the use of an approved chemical sanitizer at a specified concentration and contact time.
The ideal chemical sanitizer should:

- be approved for food contact surface application;
- have a wide range or scope of activity;
- destroy micro-organisms rapidly;
- be stable under all types of conditions;
- be tolerant of a broad range of environmental conditions;
- be readily solubilized and should have detergent attributes;
- be low in toxicity and corrosivity;
- be inexpensive.

Cleaning information

The most commonly used chemical sanitizer in food processing is chlorine in its various forms. Chlorine has activity at low temperature, is relatively cheap and leaves minimal residues. The main disadvantage is its corrosiveness to metal surfaces and health and safety concerns in confined areas.

Iodine is an antimicrobial agent, which, like chlorine, is found in many forms. When prepared with a solubilizing agent they are termed iodophors. These preparations are generally less affected by water hardness and organic residues.

Another kind of sanitizer is Quaternary Ammonium Compounds (QACs). QACs leave a residual antimicrobial film, which can be advantageous in some applications. Furthermore, QACs are surfactants too, thus they possess some detergency and can remove soil. This property makes QACs more resistant to light soils than other sanitizers.

Examples of typical cleaning and sanitizing agents are given in the following table:

Detergents			
Acidic	**Neutral**	**Alkaline**	**Sanitizers**
Surfactants	Surfactants	Surfactants	Chlorine-based
Nitric acid	Peroxides	Peroxides	Iodine-based
Phosphoric acid	QACs*	QACs*	QACs*
Acetic acid	Phosphates	Hypochlorite	Fatty acids
Solubilizer		Caustic soda	Acid anionic
		Sodium carbonate	Peroxides
			Alcohol preparations

*QACs: Quaternary Ammonium Compounds

Cleaning Methods

The enclosures used in the food industry have to be cleaned matching industry requirements. Depending on the possibility to clean the element assembled or dissembled it can be distinguished between the following methods:

- **Mechanical Cleaning**
  Often referred to as clean-in-place (CIP). Requires no disassembly or partial disassembly. Clean in place is used for the interior clean of pipes, tanks and enclosed process systems.
- **Clean-out-of-Place (COP)**
  Can be partially disassembled and cleaned in specialized COP (for example, the silicone gasket).
- **Manual Cleaning**
  Requires total disassembly for cleaning and inspection.

Cleaning procedure

Reducing the time required for thorough cleaning and optimizing the use of water, energy and chemicals are further benefits from the introduction of hygienic design enclosures. Cleaning frequency must be clearly defined for each process line (i.e., daily, after production runs, or more often if necessary).

nVent HOFFMAN HD enclosures are designed and constructed with carefully selected materials for highly sanitary operation and ease of thorough cleaning. The cleaning procedure for surfaces in a food plant is, in general: gross clean, pre-rinse, detergent application, post-rinse, sanitization and final rinse. The procedure has to be evaluated for adequacy. The chemicals used for cleaning must be compatible with the surface materials of the enclosures.

nVent HOFFMAN HD enclosures are certified for IP69 ingress protection, thus making it possible to use a high-pressure hot water jet. The enclosure can be disinfected using a certified disinfectant agent permitted for use on machinery handling food. The gasket can be cleaned and disinfected independently by removing it from the door edge.

nVent.com

Our powerful portfolio of brands:

CADDY ERICO HOFFMAN ILSCO SCHROFF TRACHTE

HOFFMAN-SB-H88245-FoodAndBeverage-UKEN-2509