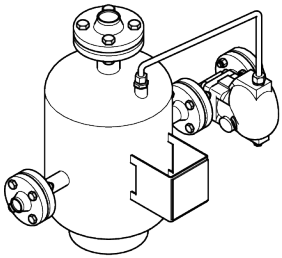
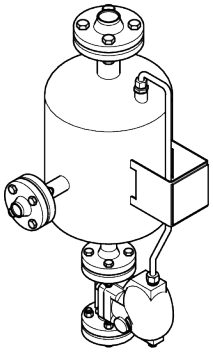
GESTRA®

Compact Flash Tank

VD 45h
VD 45v





EN
English

Original Installation Instructions

851132-00

Contents

Foreword

This Installation & Operating Manual will help ensure proper, safe and cost-efficient use of the following equipment models:

- VD 45h
- VD 45v

These equipment types are referred to below simply as “equipment”.

The equipment consists of the following main assemblies:

- Tank
- Ball-float steam trap UNA 45

This installation & operating manual is intended for anyone commissioning, using, operating, servicing, cleaning or disposing of this equipment and, in particular, for professional after-sales service technicians, qualified personnel and authorised and trained staff.

All of these persons must read and understand the content of this installation & operating manual.

Following the instructions given in this installation & operating manual helps avoiding danger and increases the reliability and service life of the equipment. Please note that in addition to the instructions given in this installation & operating manual you must also observe all locally applicable rules and regulations concerning the prevention of accidents as well as approved safety guidelines for good professional practice.

Availability of documents; other applicable documents

Further notes, instructions and information on the assemblies can be found in the documents published by the respective manufacturers. These documents form part of this Installation & Operating Manual.

Store these documents together with this Installation & Operating Manual. Make sure that the Installation & Operating Manual and the other applicable documents are available to the operator.

Hand over these documents if you sell or pass on the equipment in any way.

Please also read and follow the notes, particularly the safety notes, in the Installation & Operating Manual for the UNA ball-float steam trap.

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Formatting features in the document

Certain text elements of this installation & operating manual feature a specific typographic design. You can easily distinguish the following text elements:

Standard text

Cross-reference

- Listing
  - Sub-items in listings

➢ Steps for action.

Here you will find additional useful information and tips serving to assist you in using the equipment to its fullest potential.

Safety

Use for the intended purpose

The compact flash tank VD 45 is installed in steam systems.

The equipment is used to separate condensate and flash steam after reducing the pressure from high-pressure steam applications. It makes the flash steam obtained in this process available for the low-pressure steam system.

The equipment must only be used within the allowable pressure and temperature limits and only if the chemical and corrosive influences on the equipment are taken into account.

Correct use includes compliance with the instructions given in this installation & operating manual, in particular obedience to all safety instructions.

Any other use of the equipment is considered to be improper.

Note that the equipment is also used incorrectly if the materials of the equipment are not suitable for the fluid.

Basic safety notes

Explosion hazard

The equipment does not have its own potential source of ignition (as per ATEX Directive). Please note the following:

- During operation, avoid excessive surface temperatures caused by the fluid. The equipment itself does not generate higher surface temperatures.
- Once installed, static electricity may arise between the equipment and the connected system. If the equipment is used in potentially explosive atmospheres, the plant owner is responsible for discharging or preventing possible static charge.
- If it is possible for fluid to escape, e.g. through actuating mechanisms or leaks in threaded joints, the plant owner must take this into consideration when dividing the area into zones.

Risk of severe injuries

- The equipment may become hot during operation. Do not operate the equipment unless thermal insulation or protection against accidental contact prevents you from touching hot surfaces.
- The equipment is under pressure and can get hot during operation. Only perform work on the equipment if the following conditions are satisfied:
  - The pipes must be isolated from pressure.
  - All fluid must be thoroughly removed from pipes and the equipment.
  - Before carrying out any work, the higher-level system must be switched off and secured so it cannot be switched back on by unauthorised persons.
  - Pipes and the equipment must have cooled to around 20 °C (lukewarm).
- The equipment may only be used with fluids that are not aggressive in contact with material and seals. Otherwise, leaks may occur and hot or toxic fluid may escape.
- The equipment and its components may only be installed or removed by specialist personnel. Specialist personnel must have knowledge and experience of the following areas:
  - Producing pipe connections.
  - Selecting suitable lifting gear for the product, and using it safely.
  - Working with hot or pressurised fluids.
- If the admissible pressure and temperature ratings are exceeded, the equipment may be destroyed and hot or pressurised fluid may escape. Make sure that the equipment is always used within the admissible pressure and temperature ratings.
  You can find information on the pressure and temperature ratings on the name plate.
- If unsuitable lifting gear is used or the gear is used improperly the equipment or parts of it could fall down.
  - Make sure that only qualified personnel lifts the equipment or parts of it.
  - Make sure that nobody is standing or working below the hoisted equipment.
  - Make sure that the lifting gear is of sufficient strength for the load to be hoisted and that the load is properly secured and attached to it. For more information on the nature and weight of the components and safe lifting points please contact the manufacturer.
  - Make sure that all locally applicable regulations on safety and the prevention of accidents are strictly adhered to.

Risk of minor injuries

- There is a risk of cuts from sharp-edged parts of the equipment. Always wear protective gloves when working on the equipment.
- If the system or its parts and components are insufficiently supported, they may fall down and cause bruising. Secure the system and its components to prevent them falling down. Wear sturdy safety boots.

Information on property damage or malfunctions

- Installing the equipment against the specified direction of flow or in the wrong location will result in malfunctions. This could cause damage to the equipment or the higher-level system. Install the equipment in the pipe in the direction of flow stated in this Installation & Operating Manual.
- If the material is unsuitable for the fluid, increased wear may occur and fluid may escape. Make sure that the material is suitable for the fluid used in your installation.

Qualification of personnel

A qualified person must be acquainted with and experienced in the following:

- the pertinent on-site rules and regulations for preventing fire and explosions as well as industrial safety regulations
- working on pressure equipment
- making pipe connections
- working with dangerous (hot or pressurized) fluids
- lifting and transporting loads
- observing all notes and instructions in this installation & operating manual and the applicable documents
- safely working with tanks for dangerous (hot or pressurized) fluids

Personal protective equipment

The operator must ensure that anyone working on the equipment must wear the required protective clothing and safety gear stipulated for the site of installation. The protective clothing must be suitable for the used media and must protect the wearer against safety and health hazards associated with a particular job to be carried out at the site of installation. Protective clothing & equipment must provide protection from potential hazards, in particular from injuries to:

- Head
- Eyes
- Body
- Hand
- Feet
- Hearing

Note that this list is not exhaustive. The operator must establish personal protective equipment guidelines and specify any additional protective gear that is required if the worker is exposed to a specific risk at the site of installation.

Typographic features of warning notes

DANGER

Notes with the heading DANGER warn against imminent dangerous situations that can lead to death or serious injuries.

WARNING

Notes with the heading WARNING warn against possibly dangerous situations that could lead to death or serious injuries.

CAUTION

Notes with the heading CAUTION warn against dangerous situations that could lead to minor or moderate injuries.

Formatting features for warnings of property damage

Attention!

This information warns of a situation leading to property damage.

Description

Scope of supply and equipment specification

Scope of supply

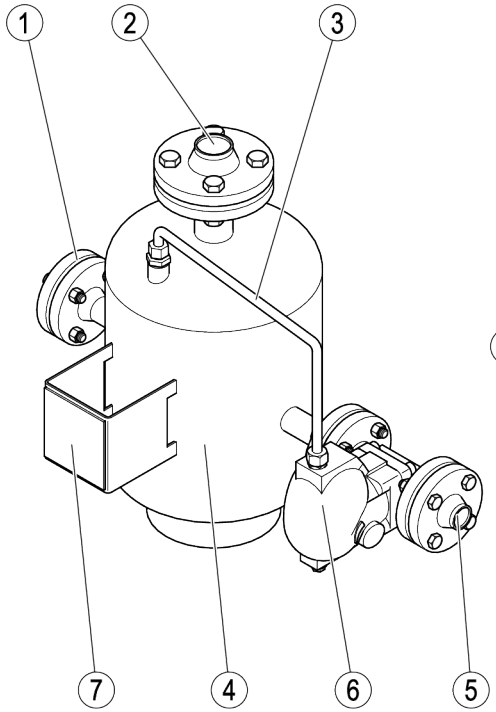
Our equipment is delivered packed and ready for assembly.

Designs

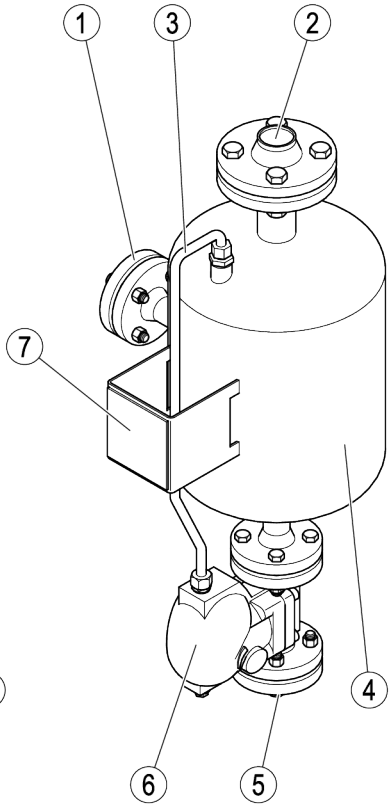
VD 45h: compact flash tank for horizontal pipe

VD 45v: compact flash tank for vertical pipe

Equipment specification



VD 45h



VD 45v

No.	Designation
1	Condensate inlet N1
2	Flash steam outlet N3
3	Air-balance pipe
4	Tank

No.	Designation
5	Condensate outlet N2
6	Ball-float steam trap UNA 45
7	Name plate

Name plate/identification

The following items are indicated on the name plate:

- Manufacturer
- Type designation
- Serial number
- Year of construction
- Mark (if required), e. g. CE, UKCA, EAC
- Min. service temperature
- Max. service temperature
- Max. service pressure
- Type of vessel
- Weight
- Body of regulations
- Test pressure
- Test date
- Volume

End connections

- Flanges

Application of European Directives

Fluids

The equipment must conform to the requirements of the Pressure Equipment Directive (see Manufacturer's Declaration) and can be used for the following media:

- Fluids of group 2

Due consideration must be given to chemical and corrosive influences.

Use in potentially explosive atmospheres

The equipment does not have its own potential source of ignition (as per ATEX Directive). Please pay attention to the following information:

Make sure that during operation the fluid does not cause an excessively high surface temperature.

The equipment itself does not generate higher surface temperatures.

Once installed, static electricity may arise between the equipment and the connected system.
If the equipment is used in potentially explosive atmospheres, the plant owner is responsible for discharging or preventing possible static charge.

If it is possible for fluid to escape, e.g. through actuating mechanisms or leaks in threaded joints, the plant owner must take this into consideration when dividing the area into zones.

Task and function

Purpose

The compact flash tank VD 45 is installed in steam systems.

For example, the equipment can be installed downstream of the boiler's continuous blowdown valve or downstream of consumers.

After reducing the pressure from high-pressure steam applications, the equipment is used to separate condensate and flash steam and makes the flash steam obtained in this process available for the low-pressure steam system. This makes the overall system more efficient.

Function

Condensate and flash steam from the high-pressure steam application flow through connection N1 into the tank. The flash steam collects at the top of the tank and is returned to the low-pressure steam system from there. The condensate is discharged into the collection tank via the ball-float steam trap.

The following pressure ratios are required for the equipment to work correctly: $p_{HP} > p_{LP} > p_{SD}$

p_{HP}: pressure of high-pressure application
p_{LP}: pressure of low-pressure steam line
p_{SD}: pressure of collection tank

Storing and transporting the equipment

Storing the equipment

➢ Please observe the following items when storing the equipment:

- Do not store the equipment for more than 12 months.
- Use the supplied sealing plugs or other suitable seal caps in order to seal off all openings of the equipment.
- Protect the sealing surfaces and contact areas against mechanical damage.
- Protect the equipment and all components against hard shocks and impacts.
- Store the equipment only in closed rooms that meet the following environmental conditions:
  - Air humidity below 50 %, not condensing
  - Indoor air: clean, salt-free and non-corrosive
  - Temperature 5–40 °C.

➢ Make sure that all these requirements are always met when storing the equipment.

➢ Please contact the manufacturer if you cannot comply with the recommended storage conditions.

Transporting the equipment

DANGER

Risk of bruises if the equipment or component parts fall down.

➢ Use suitable lifting gear when moving or lifting the equipment and/or component parts.

➢ Make sure that the equipment cannot topple over.

➢ Make sure that nobody is standing below the lifted equipment.

➢ Meet the requirements for storage also when transporting the equipment.

➢ Before transporting the equipment, fit the sealing plugs or covers on the connections.

If you do not have the covers that were supplied, seal off the connections using comparable covers.

➢ For short distances (only a few metres) you can transport the equipment unpacked.

➢ When transporting the equipment over larger distances use the original packaging.

➢ If you do not have the original packaging use a box that protects the equipment adequately against corrosion and physical damage.

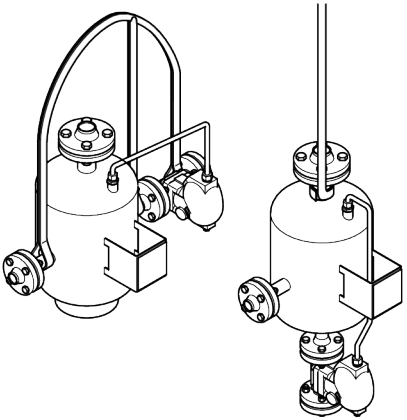
For a short period of time the equipment may be transported even if the temperature is below 0 °C, provided that the equipment is completely empty and dry.

You can lift the equipment with straps in order to transport it. The attachment points on the connections are also specified in the customer/transport drawing.

➢ Fasten the straps to the attachment points.

➢ Lift the equipment at the straps using suitable lifting gear.

➢ Transport the equipment to your desired position.



Mounting and connecting the equipment

Preparing installation

DANGER

Risk of bruises if the equipment or component parts fall down.

- ➢ Use suitable lifting gear when moving or lifting the equipment and/or component parts.
- ➢ Make sure that the equipment cannot topple over.
- ➢ Make sure that nobody is standing below the lifted equipment.

- ➢ Take the equipment out of the transport packaging.
- ➢ Check the equipment for transport damage.
- ➢ Contact the manufacturer if you detect any kind of shipping damage.

DANGER

Personnel working on pipes are exposed to safety risks and may suffer severe injuries, poisoning or even loss of life.

- ➢ Make sure that no hot or hazardous fluid is in the equipment or the pipes.
- ➢ Make sure that the pipes upstream and downstream of the equipment are depressurised.
- ➢ Make sure that the installation is switched off and protected against unauthorised or unintended activation.
- ➢ Make sure that the equipment and the pipes have cooled down to room temperatures.
- ➢ Wear protective clothing that is suitable for the fluid and, if necessary, wear protective gear.

For more information on suitable protective clothing and safety gear refer to the safety data sheet of the fluid in question.

- ➢ Drain pipes until they are empty.
- ➢ Switch the installation off and protect it against unauthorised or unintended re-activation.

Mounting the equipment

DANGER

Incorrectly connected equipment can cause fatal accidents or severe injuries.

- ➢ Make sure that only qualified skilled personnel connect the equipment to pipes.

Specialist personnel must be highly qualified and fully experienced in making pipe connections for the respective type of end connection.

When supplied by the factory, the connections may be sealed off with sealing plugs.

- ➢ Remove sealing plugs before mounting the equipment.
- ➢ Keep the sealing plugs and the packing for further use.

Attention!

The equipment can be damaged if connections are too weak.

- ➢ Make sure that the connected equipment is not subjected to any forces or torques.

The plant owner is responsible for ensuring that the equipment and sealing material are suitable for the fluid used.

- ➢ Make sure that the materials of all equipment components are suitable for the fluid used.
- ➢ Inspect all seals before installation to ensure they are in perfect condition.
- ➢ Make sure that the pipe system of the plant is clean.
- ➢ Make sure that the equipment is free from foreign matter.
- ➢ Install the equipment with the flash steam outlet N3 pointing vertically upwards.
- ➢ Connect the pipe for the condensate supply to condensate inlet N1.

- Connect the pipe for the condensate outflow to condensate outlet N2.
- Connect the steam line to flash steam outlet N3.
- Make sure that the equipment is safely mounted and that all connections are made correctly.
- Power up the system.
- At operating temperature, check that flanged connections are tight.

If any flanged connections are leaking, proceed as follows:

- Power down the system.
- Wait until the tank and pipes have cooled to a lukewarm temperature.
- Re-righten threaded joints.
- Power the system up again.
- Again check that flanged connections are tight at operating temperature.

CAUTION

During operation, the surface of the system and its components becomes hot. There is a risk of burns!

- Insulate the surfaces of the system using suitable material.
- Attach warning notices to any surfaces that are not insulated.

Operation

Do not work on the equipment while it is operating.

- Check the function and condition of the equipment at regular intervals.

If required, you can check during operation that the ball-float steam trap is working perfectly using the GESTRA VAPOPHONE® or TRAPTEST® (VKP 4…) ultrasonic testers.

- To do this, read the Installation & Operating Manual of the ultrasonic tester.

After operation

Attention!

Frost damage can occur when the system is not in operation.

- Drain the equipment if there is a risk of frost.

- At the installation site, make sure that the equipment can be safely drained.

Removing external dirt deposits

- To remove dirt deposits rinse the equipment with fresh water and wipe it with a clean, lint-free cloth.
- To remove any persistent residues use a cleaning agent that is suitable for the material and carefully wipe the equipment with a clean, lint-free cloth.

Maintaining the equipment

In terms of the tank, no special maintenance work is required.

In terms of the ball-float steam trap UNA 45 , read and follow the information in the relevant Installation & Operating Manual.

The intervals for checking the equipment for internal corrosion and deposits must be determined by the owner based on the local conditions. These intervals must be agreed with the local inspection bodies.

Servicing the equipment and installing spare parts

For the tank, no spare parts are available.

- Replace damaged equipment with new.

For the ball-float steam trap, spare parts are available as set out in the Installation & Operating Manual of the ball-float steam trap.

- Replace components only with genuine spare parts from the manufacturer.

Spare parts for the VD 45

Flange connection set	Connection DN	Stock code	Tightening torque
2 × gaskets 8 × bolts 8 × nuts	DN 25, PN 10–40	1507115	30 Nm
	DN 40, PN 10–40	1507116	90 Nm
	DN 50, PN 10–16	1507117	90 Nm

Troubleshooting

Problem	Cause	Remedy
Fluid escapes (equipment is leaking).	The connections are not tight.	Provide the connections with leakproof seals.
The equipment is losing steam.	The steam trap fitted is damaged or worn.	Follow the instructions in the Installation & Operating Manual for the steam trap fitted.
The flow rate is too low.	The steam trap fitted contains dirt, deposits or foreign bodies.	Follow the instructions in the Installation & Operating Manual for the steam trap fitted.
The flowrate is too low. The equipment is cold or only lukewarm. Insufficient heat output of consumers.	Contamination in the inflow, outflow or equipment.	Clean the pipe. Clean all inner parts. Replace inner parts or equipment if damaged.
The flow rate is too low. The equipment is cold or just lukewarm. Consumers have insufficient heat capacity.	The equipment contains dirt, deposits or foreign bodies.	Flush the equipment. Replace the equipment.

➢ Please also read and follow the information in the Installation & Operating Manual for the ball-float steam trap.

➢ If faults occur that are not listed above or cannot be corrected, please contact our Technical Service or authorized agency in your country.

Putting the equipment out of operation

Removing the equipment

DANGER

Personnel working on pipes are exposed to safety risks and may suffer severe injuries, poisoning or even loss of life.

- ➢ Make sure that no hot or hazardous fluid is in the equipment or the pipes.
- ➢ Make sure that the pipes upstream and downstream of the equipment are depressurised.
- ➢ Make sure that the installation is switched off and protected against unauthorised or unintended activation.
- ➢ Make sure that the equipment and the pipes have cooled down to room temperatures.
- ➢ Wear protective clothing that is suitable for the fluid and, if necessary, wear protective gear.

For more information on suitable protective clothing and safety gear refer to the safety data sheet of the fluid in question.

DANGER

Risk of bruises if the equipment or component parts fall down.

- ➢ Use suitable lifting gear when moving or lifting the equipment and/or component parts.
- ➢ Make sure that the equipment cannot topple over.
- ➢ Make sure that nobody is standing below the lifted equipment.

➢ Fully drain the equipment using the drainage system at the installation site.

➢ Detach the end connections of the equipment from the pipes.

➢ Put the equipment onto a suitable base.

➢ Store the equipment as described on page 9.

Re-using equipment after storage

Observe the following instructions if you want to remove the equipment and use it again somewhere else:

◗ Make sure that the equipment is free of any fluid residues.

◗ Make sure that all connections are in good condition and leak-free.

➢ Use the equipment only for its intended purpose and the service conditions for which it was specified.

Returning the equipment

You can return the valve to your contractual partner.

➢ Make sure that all harmful substances are removed from the valve.

➢ Insert the stoppers in the connections.

➢ Observe the instructions in section "Transporting the equipment" from page 9.

➢ Pack the valve in its original packaging or in a suitable transport packaging.

The transport packaging must protect the valve from damage in the same way as the original packaging.

➢ Add the completed and signed decontamination declaration to the valve. The decontamination declaration must be attached to the packaging so that it is accessible from outside.

➢ Register the return delivery with your contractual partner before returning the valve.

Disposing of the equipment

CAUTION

Environmental damage may be caused by poisonous fluid residues.

- ➢ Before disposing of the equipment make sure that it is clean and free of fluid residues.
- ➢ For the disposal of all materials observe the pertinent legal regulations concerning waste disposal.

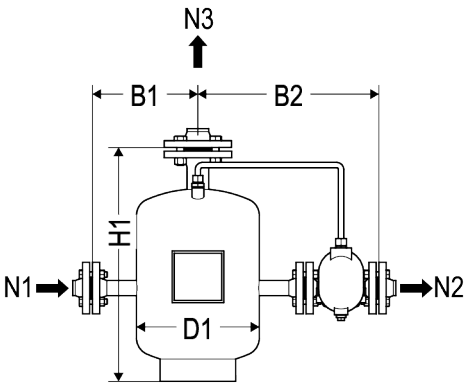
The equipment is made from the following materials:

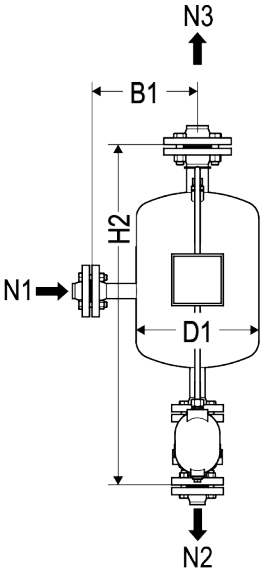
Component	Material
Flange	1.0460
Pipes, jacket	1.0345
Foot, VD 45h	1.0345
Base	1.0425
Body, UNA 45[1]	1.0460
Cover, UNA 45[1]	5.3103

1 See documentation for ball-float steam trap UNA 45

Technical data

Dimensions and weights





		VD 45h DN25	VD 45h DN40	VD 45v DN25	VD 45v DN40
Contents	l	17.6			
Flange nominal pressure rating PN		40			
N1 condensate inlet DN		25	40	25	40
N2 condensate outlet DN		25	40	25	40
N3 flash steam outlet DN		40	50	40	50
Air-balance pipe Ø	mm	12			
B1	mm	237			
B2	mm	399	470	–	
H1	mm	514	527	–	
H2	mm	–		754	821
D1	mm	273			
Weight, empty	kg	51	73	50	72
Weight, full	kg	69	91	68	90

Ambient conditions

Area of application	Indoors and outdoors
Admissible ambient temperature	0 — 55 °C
Relative humidity	5 — 85 % (no moisture condensation)

Pressure & temperature ratings

You can find the values for your equipment on the rating plate.

Declaration of Conformity – Standards and Directives

You can find details on the conformity of the equipment and the relevant standards and directives, where applicable, in the Declaration of Conformity and associated certificates or approvals.

The valid Declaration of Conformity is available to download at www.gestra.com . You can request the associated certificates and approvals by writing to the following address:

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28215 Bremen
Germany
Phone +49 421 3503-0
Fax +49 421 3503-393
e-mail info@de.gestra.com
Web www.gestra.com

Modifications to the equipment not approved by us will invalidate the Declaration of Conformity and certificates/approvals.

You can find our authorized agents around the world at: **www.gestra.com**

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