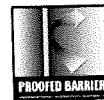
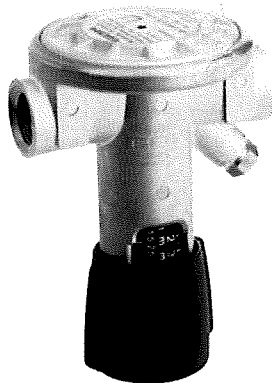


Membrane controlled anti-siphon device
Type HS-V.2



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ABOUT THESE INSTRUCTIONS



- These instructions are part of the product.
- Keep them in a safe place while you are using the product.
- These instructions must be observed and handed over to the operator to ensure that the component operates as intended and to comply with the warranty terms.

MODIFICATIONS COMPARED TO PREVIOUS VERSION



NOTE

- Installation location added.
- Information about the reinforcement ring added.

INTENDED USE

The product may be operated in areas that are at risk of flooding or high water, but not in potentially explosive areas.

Operating media	Standard	Density ρ_{Fuel} in kg/m^3
Fuel oil EL	DIN 51603-1	860
*) Fuel oil EL A and fuel oil EL A Bio 5 - 50	DIN SPEC 51603-6	860
*) Light fuel oil	ÖNORM C1108 (AT)	-
*) Extra light fuel oil (low sulphur) EL	ÖNORM C1109 (AT)	860
*) Extra light fuel oil with biogenic components EL	ONR 31115	-
*) FAME	EN 14213 / 14214	900
*) Diesel fuel	EN 590 and DIN 51628	840
*) Other liquid fuels	prEN 12514-1:2009 Annex A	-
*) Rapeseed oil fuel	DIN 51506	930
*) Vegetable oils, (such as cotton seed, soy, wheat germ, castor, palm, rapeseed, olive, coconut, sunflower, etc.)		-

*) Use of the product with these media is not an element of the general technical approval.

SAFETY DEVICE AGAINST SIPHONING

There is a risk of liquid fuels escaping while the burner/pump is not operating due to the pressure of the fuel column in the suction line if:

- the minimum liquid level in the tank is above the lowest point in the suction line (ΔH),
- a feed line is below the highest level of the operating tank of a pump unit.

This is described as siphoning. A safety device against siphoning prevents this.

PRINCIPLE OF OPERATION

- If the feed system is not operating, the suction line is blocked by the spring-loaded valve in the HS-V.2.
- This valve opens with the vacuum generated when the pump unit starts up.
- If there is a leak in the suction line when the burner is not operating, the HS-V.2 remains closed and thus prevents fuel escaping.
- The HS-V.2 is equipped with an integrated safety device against excess pressure – known as a pressure relief valve. If, while the system is not operating, the pressure rises due to a rise in temperature, for example, the valve opens towards the tank in relation to the safety level that is set, approx. $0.2 + 2$ bar.

ASSEMBLY

Before assembling, check that the product is complete and has not suffered any damage during transport.

ASSEMBLY, START-UP and MAINTENANCE are to be carried out by a specialised company in terms of water law.

For the system to function as intended it must be installed professionally in compliance with the technical instructions applicable to the planning, construction and operation of the entire system.

- Before installation, visually check that there are no metal filings or residues in the connections. Blow them out to prevent any functional problems.
- Observe installation → direction!

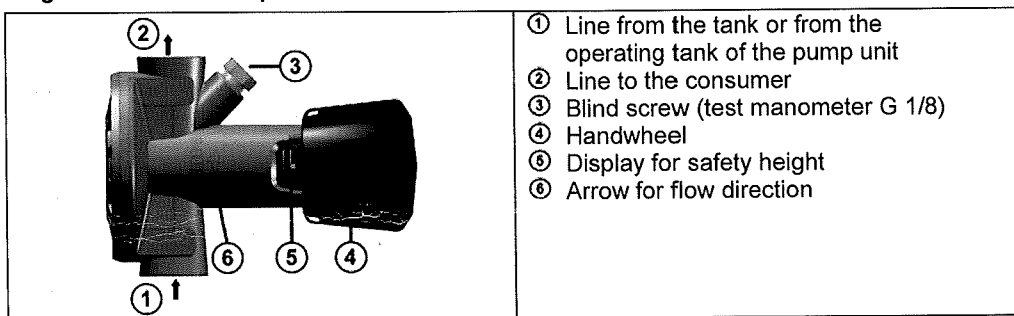


Tool

Assemble only with a suitable open-end spanner. Always brace against the connection bracket.

Do not use any other tool.

Figure 1: Installation position



Installation location and installation position



NOTE

- The product is to be installed in the suction line always above **the maximum liquid level close to the tank.**
- It can be positioned where you wish, but to prevent gas bubbles forming, **vertical installation** is recommended.
- The product must be accessible for the required checks.

Installation in a dome

Install the product horizontally so that the top with the ventilation opening for the membrane faces downward. This allows any condensation that forms to run out.

Recommendation: Install a filter.



NOTE

Installation behind pump units with an operating tank.

The actual height difference ΔX is the difference between the installation position of the HS-V.2 behind the pump unit and the lowest point in the suction line.

Adjusting the anti-siphon device - HA according to the actual height difference ΔX

For the height setting **HA** of the HS-V.2, the actual height difference ΔX is decisive. If the height ΔX is greater than **HA**, the pressure of the fuel column behind the anti-siphon device is higher. The opening pressure $p_{o,o}$ must therefore be higher than the pressure of the fuel column for the HS-V.2 to function properly.



NOTE

Operating safety: Adjust **HA** so that the actual height difference ΔX is just safeguarded.

Higher **HA** values lead to greater opening pressures $p_{o,o}$ and, consequently, to higher vacuums in the suction line and increased formation of gas bubbles.

1. Measure the height difference ΔX between the installation position of the anti-siphon device and the lowest point of the suction line – generally, the hose on the floor in front of the point of consumption.
- ✓ The setting for the safety level according to Points 3 and 4 applies for fuels with a maximum density of $\leq 860 \text{ kg/m}^3$, e.g., fuel oil EL.
2. Set the correct safety level from the measured height difference ΔX :

Type	Height setting HA in m	$p_{o,o}$ in mbar	Pressure loss Δp_v at V in mbar	
			40 l/h	220 l/h
HS-V.2	0.5	-75	-	-
	1.0	-115	< 5	40
	2.0	-200	< 10	47
	3.0	-284	< 10	52
	4.0	-366	< 10	60

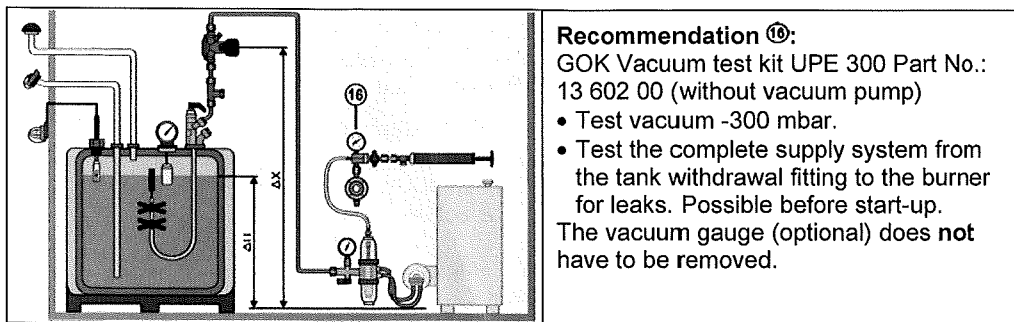
3. Set measured height difference $\Delta X \leq \text{HA}$ on the scale using the handwheel (see **OPERATION**).

START-UP

If a pressure test has to be carried out in the piping before the supply system is put into operation (e.g. according to DIN 4755 or TRÖI), a test pressure of max. 6 bar can be applied. A vacuum test according to TRÖI - Section 4.10.4.2 is recommended. "Leak test with vacuum" (see 16).

- Check that the product is installed properly
- Check that the product and the connection do not leak within the scope of the recurring checks of the supply system. Repair leaks!

Figure 4: Test equipment



The anti-siphon device can be included in the pressure and leak tests if it is set to "ventilate" - see **OPERATION**.

- Observe the consuming appliance manufacturer's instructions for start-up.
- The time required for starting up the supply system can be reduced by **VENTILATING** the anti-siphon device. The handwheel must be set to the safety level **HA** and be sealed so that it cannot be adjusted without authorisation.
- Carry out a **FUNCTION CHECK** and **do not ventilate anymore!**

FUNCTION CHECK

VENTILATE the suction line (Figure 3).

Option 1:

- Start the pump unit at the point of consumption - generally the burner pump.
- Ensure stable operation.
- Switch the pump off.
- Loosen the connection/screws at the lowest point of the suction line - generally the hose to the consumption point.
- No operating medium should run out.



NOTE

If there is air or gas in the suction line, the suction line will empty completely. There should be no subsequent escape of medium.

Option 2 (if a test manometer is used):



NOTE

Option 2 is in preparation.

DISPOSAL

To protect the environment, oil-saturated products may not be disposed of along with household waste or in public waters or sewage systems. The product must be disposed of via a local collection station or a recycling station. If you do not have any possibilities for proper disposal, contact us regarding disposal options.

TECHNICAL DATA

Temperature of medium	0 °C to +40 °C	Ambient temperature	-25 °C to +40 °C
Housing material	ZP0410	max. flooding height	10 m
Safety level of type HS-V.2	0.5 m to 4 m	Test manometer connection	G 1/8, closed blind
Flow rate of medium	220 l/h	max. permitted pressure	PS 10 bar
Piping connection	Both sides IG G 3/8		