

Tigerloop[®] Auto

For de-aeration of fuel supply lines to:

auxiliary heaters in buses, trains, motorhomes, workboats, diesel generators, etc.



Tigerholm™ Series

Welcome to a World of Innovation

We are a progressive company that develops, manufactures and sells innovative products for professional users within the HVAC, Automotive and Marine industry. Products like the oil/fuel de-aerator - Tigerloop®, the draught stabiliser - Tigex® and the NoTap® method, which allows branch connections and pipe blocking on pressurised pipes, have made our company a world leader within our niche.

The Tigerholm series became a part of the SPX FLOW product line in 2006.

Based in Charlotte, North Carolina, SPX FLOW is a multi-industry manufacturing company with operations in more than 35 markets worldwide, approximately \$2.5 billion in annual revenue and more than 8,000 employees.

SPX FLOW's innovative, world-class products and highly-engineered solutions are helping to meet the needs of a constantly developing world and growing global population. You'll find our innovative solutions in everything from dairy plants and power plants to oil and gas pipelines, and the power grid. SPX FLOW is really everywhere you look. Please visit us at www.spxflow.com

Tigerloop® - providing reliable air-free fuel flow for better combustion

YOU DEMAND RELIABILITY

No matter how cold the weather gets, you expect warm temperatures in your homes or even when travelling in buses, trains, boats, or other forms of transportation. You don't want to be reminded of background processes through strange noises or alarming breakdowns.

YOU EXPECT QUALITY

With over 40 years experience and the Tigerloop® installed in more than 5.5 million oil heating systems around the world, we have the experience and competence to further develop the world's best fuel de-aerator. The Tigerloop® models meet present and increasingly tougher future demands for environmental safety, cost savings and reliability. To meet the increasing demand of environmental regulations, Tigerloop® improves heating installations by providing clean, air-free fuel to the heating source.

OUR PHILOSOPHY

Liquid fuel is an important source of the world's raw energy and will continue to answer for large amounts of heating and transportation for many years to come. This puts a heavy responsibility on the modern heating and transportation industries to develop efficient and environmentally safe products. Using a Tigerloop® in a one-pipe system is the most environmentally safe method for transporting fuel from the oil tank to the heating source.

QUALITY ASSURANCE

One of our seven different testing stations along our production line is a 12-hour tightness test. Each and every Tigerloop® is tested for 12 hours to be 100% tight. This is just one more reason why the Tigerloop® ensures reliability for each customer.

Our company is also certified according to ISO 9001:2008



NEW MODEL

TIGERLOOP® AUTO PLUS 2

The New Tigerloop® Auto Plus 2 offers several advantages thanks to the integrated spin on filter and integrated heavy-duty bracket with optional vibration dampers. The installation is done with fewer connections simplifying the installation and reducing the risk for leakage



Technical data:

Max nozzle capacity	110 l/h
Max return oil pumped into the Tigerloop®	120 l/h
Max oil flow	230 l/h
Max de-aerating capacity	8 l/h
Max operating temperature	85°C
Max. operating pressure in feed line	-0,6 bar

Typical product applications

AUTOMOTIVE/MARINE

A new Tigerloop® model has been introduced for use with auxiliary heaters used in buses, trains, workboats, etc.



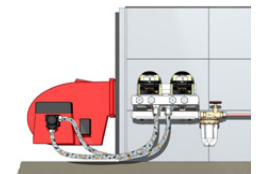
RESIDENTIAL BOILER/FURNACE

The most common application for the Tigerloop®. We are the world-leader with over 40 years experience.



INDUSTRIAL BOILER/FURNACE

Did you know that there is a Tigerloop® Twin that can be used on industrial boilers up to 2000 kW capacity.



BUILDING INDUSTRY

The Tigerloop® is used with portable heaters for warming building sites or even for drying a building after a flood.



LIVESTOCK & HORTICULTURE

The Tigerloop® is ideal in combination with an elevated heater as only one pipe is needed, which eliminates the return line to the oil tank.



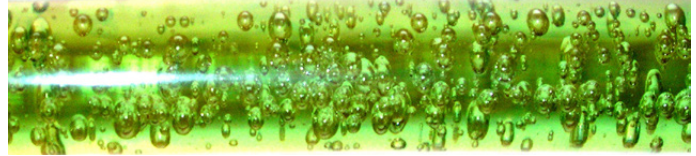
SUMMARY OF TIGERLOOP® ADVANTAGES

- De-aerates the fuel for optimal combustion
- Eliminates the risk of leakage from a return line
- Flow of fuel reduced to nozzle capacity
- Reducing the flow of fuel preserves the quality of fuel
- Less dirt/sludge transported in the system
- Better combustion, reduces fuel consumption
- Solves problem of nozzle dripping
- Reduces soot build-up for increased efficiency
- Provides the best possible conditions for pump

Tigerloop[®] eliminates common problems associated with liquid fuel heating

GAS/AIR BUBBLES IN FUEL

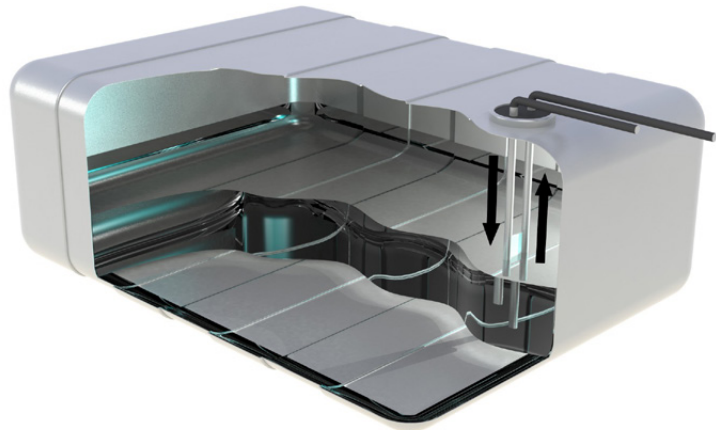
When fuel is drawn up from the fuel tank to the burner, large amounts of gas bubbles can be released from the fuel. These gas bubbles are released when there is a negative pressure (vacuum) in the suction line. The quality, temperature and viscosity of the fuel will also play a determining role in the



amount of gas released. This occurs in almost every installation, but above all when the fuel must be lifted to a higher level and/or drawn through long suction lines. The gas/air bubbles flow with the fuel into the fuel pump and are the leading cause of breakdowns. Gas/air bubbles also lead to an increased build up of soot, reduced efficiency, increased emission of harmful particles, unnecessary wear and tear on the fuel pump and higher fuel consumption.

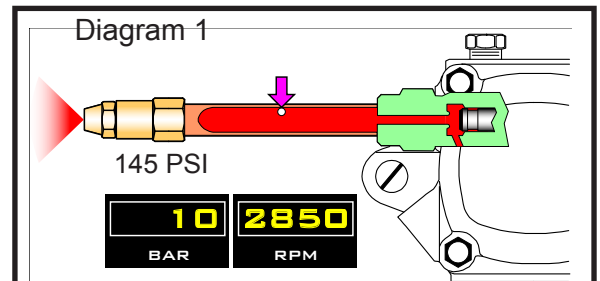
PROBLEMS WITH TWO-PIPE SYSTEM

The two-pipe system was developed to try and get rid of the gas/air bubbles from the fuel pump. A return line pumps the separated gas/air bubbles together with the unburned fuel from the oil pump back to the fuel tank. This, however, does not reduce the amount of gas/air bubbles that flow to the nozzle for combustion, which results in nozzle problems (see next page). The high flow of fuel in the two-pipe system (up to 20 times more than what is actually used for combustion) leads to an increased amount of particles being transported in the system, which leads to clogged fuel filters and nozzles problems.

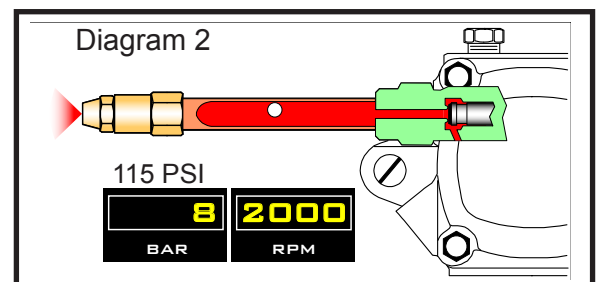


BURNER NOZZLE PROBLEMS

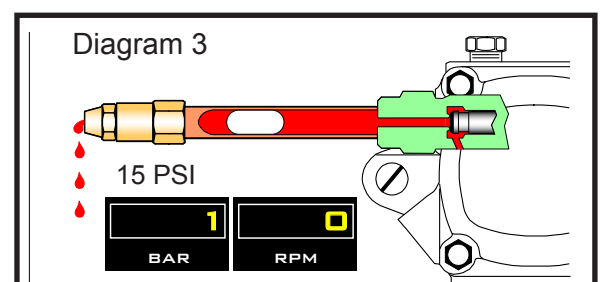
Diagram 1 shows a cut-away of a pump/nozzle operating normally, except for the air bubble lodged in the nozzle line. The bubble is deceptively small, since its size has been compressed by the pressure in the nozzle line. As long as the oil pump operates, the bubble will remain small and compressed, having no effect on burner operation.



However, when the pump shuts down, it is a different story. As the pump's rpm decreases, the piston will close against the nozzle seat, cutting off the flow of oil from the pump, but not the flow of oil from the nozzle. The expanding bubble has taken over for the pump in supplying the pressure, pushing fuel out of the nozzle. (diagram 2).



Fuel flow does not cease until the bubble has expanded back to its original size and nozzle line pressure has dropped to zero (diagram 3). The result is virtually no cut-off, with sooty, smoky shutdowns. And, a solenoid valve will not help this problem. It is strictly a problem caused by air bubbles.



Tigerloop[®] eliminates common problems associated with liquid fuel heating

BURNER PUMP PROBLEMS

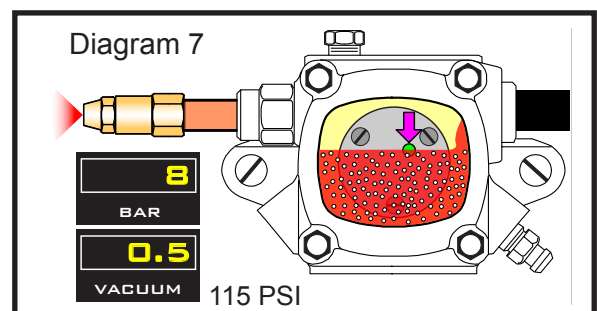
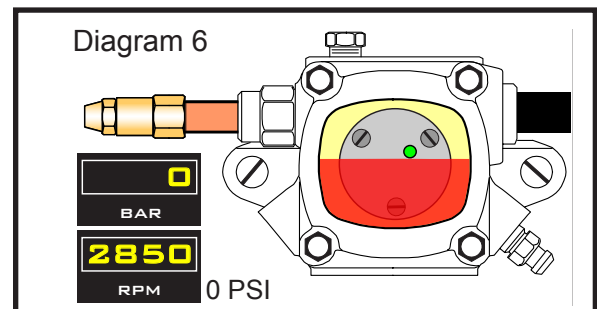
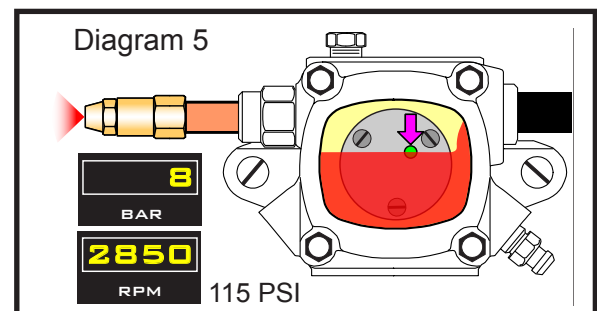
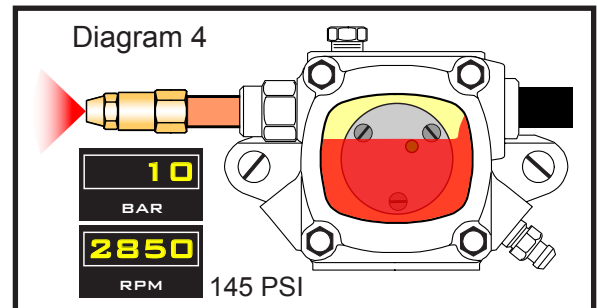
Moreover, the presence of air bubbles in the fuel has some consequences on the operation of the pump. Diagram 4 is a cut-away of a pump's strainer chamber, with the pump operating normally. The level of fuel does not fill the entire chamber. This is normal because during bleeding the fuel level only rises high enough to just cover the inlet to the gear set, about two-thirds of the way up the strainer chamber. This air cushion formed at the top quiets the hydraulic whine of the gear set and does not affect pump operation. As long as the inlet to the gear set stays covered, all is well.

But, if air enters the pump, it will immediately rise to the top, pushing down the oil level in the strainer chamber and partially uncovering the inlet to the gear set. (diagram 5). The gear set starts gulping air and oil and the pressure becomes unstable, resulting in poor combustion, noise, rumbling, pulsation...

If enough air enters, the oil level drops completely below the inlet to the gear set, the pressure is lost and the burner eventually locks-out. (diagram 6).

The second kind of bubbles are gases which come from dissolved vapors and volatiles that are drawn out of the oil when it is exposed to vacuum. The higher the vacuum, the more bubbles produced.

Diagram 7 shows what is going on in the strainer chamber of the oil pump. The bubbles drawn out of the oil rise to the top of the strainer chamber, the oil level falls, the gear set gulps foamy oil, pressure becomes unstable and the burner eventually locks out.

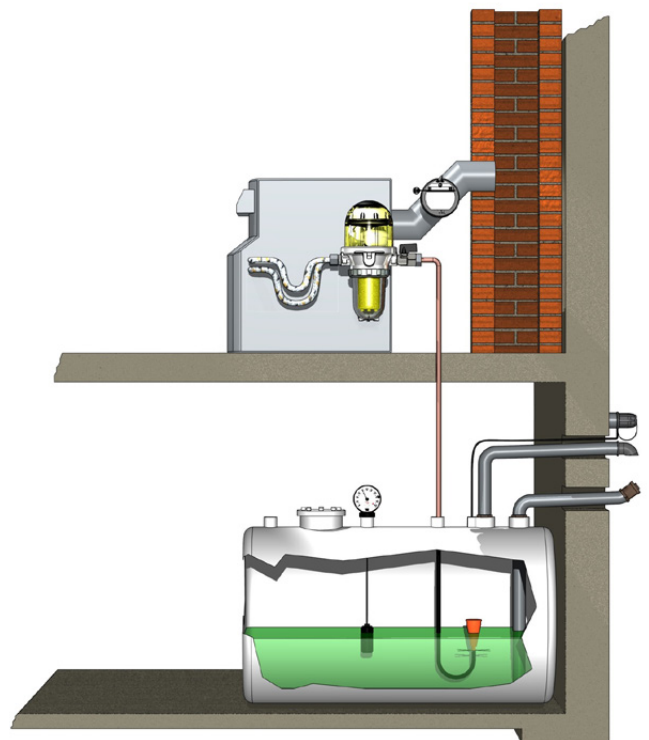


THE TIGERLOOP[®] PREVENTS SUCH AIR/GAS PROBLEMS BY AUTOMATICALLY AND CONTINUOUSLY DE-AERATING THE OIL BEFORE IT ENTERS THE OIL PUMP.

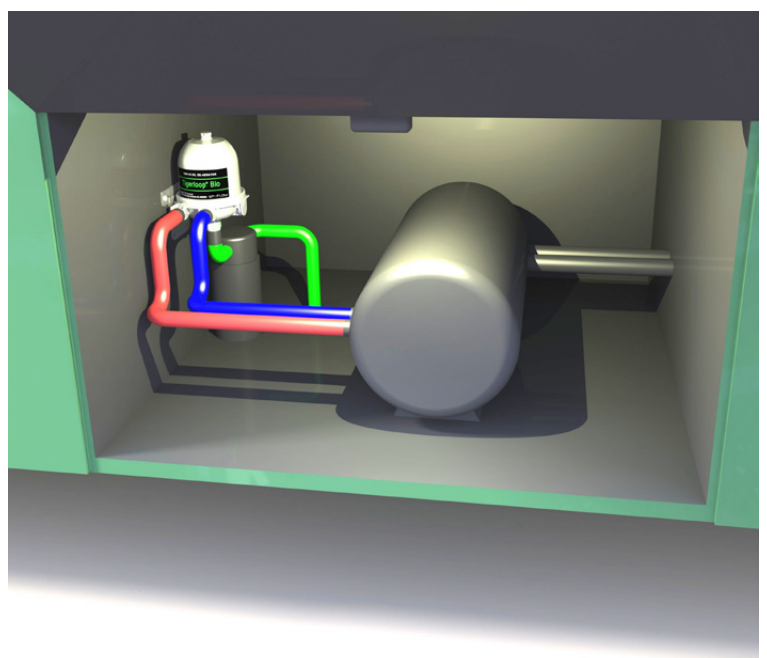
Tigerloop® - for environmentally safe and highly efficient fuel heating installations

The Tigerloop® allows you to place the fuel tank below the level of the burner. Air bubbles that are released in the fuel due to the vacuum in the system are automatically and continuously removed thanks to the Tigerloop®. By using the Tigerloop® system, only the amount of fuel burned in combustion is actually drawn from the fuel tank. This reduces the flow of fuel, which saves filter life and preserves fuel quality. Also, with no return line to the fuel tank you will reduce installation costs and eliminate the risk for return-line leakage.

A fuel pump delivers the same amount of fuel irrespective of what is actually needed for combustion. In the case of a normal domestic burner, only approx. 5 % of the delivered fuel is actually burned in combustion. In the case of the traditional two-pipe system, the remaining 95% is transported back to the fuel tank. With a Tigerloop® automatic fuel de-aerator, no fuel needs to be transported back to the tank. The fuel that is not burned in combustion is lead back to the Tigerloop® where it is de-aerated again and again automatically. For this reason only the amount of fuel to be burned in combustion is sucked from the fuel tank.



Gas/air bubbles are also released when friction in long fuel lines causes a vacuum (negative pressure) to build in the fuel line. The more friction, the more bubbles that will be released, causing problems for the fuel pump. The result is poor combustion and increased fuel consumption. The Tigerloop® even solves this problem by continually de-aerating the fuel.



SPXFLOW

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For de-aeration of fuel supply lines to: auxiliary heaters in buses, trains, motorhomes, workboats, diesel generators, etc.

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