



## Documentation

The following information sheets illustrate the description below:

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| <b>40-Z101-4G-E</b> | Sectional view of the lance with main dimensions                       |
| <b>40-W101-6Q-E</b> | Sectional view of the head of the lance with atomiser and reverse disc |
| <b>00-Z101-8G-E</b> | Diagram of pneumatic/hydraulic system inside the lance                 |

## General

The burnerlance 40-SK without shut-off needle is especially suitable for use in or on an oil burner and is designed to operate 40-Y atomisers with compressed air or steam.

The volume of the fuel supply tube inside the lance is minimised, providing the possibility to rapidly blow out the fuel after closing the fuel supply, by means of compressed air or steam.

The burnerlance is suitable for supply pressures up to 16 bar and fuel temperatures up to 140°C.

## Mounting the atomiser parts

Often a lance is delivered with the atomiser parts mounted. This is just to avoid loss of parts during transportation. The capnut then is screwed on by hand, not tightened. In this case, you should also mount the atomiser parts as described below.

The atomiser and the reverse disc are to be built in according to information sheet 40-W101-6Q-E.

To ensure adequate sealing, the sealing surfaces at the adaptor, at both sides of the reverse disc and at the atomiser should not be damaged. Never use any additional sealant on these surfaces.

Remove the capnut from the lance. Make sure all parts involved are clean and free from any dust or other particles. Place the atomiser and the reverse disc, in the right order and position, straight inside the capnut as shown in sheet 40-W101-6Q-E.

It is advised to apply a little "Molykote HSC" or equivalent compound, on the thread of the adaptor only, to prevent problems when dismantling the capnut after a longer period. The sealing surface of the adaptor, the inside of the lance, the reverse disc and the atomiser are to be kept absolutely clean.

Now carefully screw on the capnut, containing the atomiser and the reverse disc, by hand as tight as possible. Tighten the capnut firmly with a spanner. The adaptor has flat sides to hold the lance while screwing or unscrewing the capnut. These flats exclusively serve this one purpose!



## Connections

The connections (see 00-Z101-8G-E) on the block of the lance are marked as follows:

- O** Fuel supply to the atomiser. A filter having meshes smaller than 100  $\mu\text{m}$  should be present. Fuel output control is achieved by connecting either a pressure or a volume regulator.
- A** Compressed air or steam supply to the atomiser. The pressure either is kept constant or under control of a constant differential pressure system. The way of control and the pressure only depend on the behaviour desired for the atomiser.
- B** Compressed air or steam supply to blow the fuel out of the lance after closing of the fuel supply. The pressure only depends on the behaviour desired for the atomiser.
- M** The fuel supply pressure to the atomiser is available here, allowing evaluation of this pressure by a pressure gauge or sensor.

To prevent malfunction, be careful when removing the plastic plugs from the connection ports and make sure no material stays behind.

When choosing fittings, make sure that the channels inside the connection block remain fully open. Even a partial blockage at one of the channels inside will inevitably lead to malfunctioning of the burnerlance.

Never use any additional sealant on the thread. The remains getting inside the lance could lead to failures. There are no objections against the use of flat gasket rings to seal the fittings.

## Function

During the pre-purge period, the external solenoid valves in the fuel supply line (to port "O") and in the purge line (to port "B") are both closed, preventing fuel from reaching the furnace prematurely.

Atomising pressure in the lance starts building up after the compressed air or steam to port "A" has been switched on. Before opening the external solenoid valve in the fuel supply line, make sure the **IGNITION IS TURNED ON**. In addition, the external regulator, the air or steam pressure and the combustion airflow are to be adjusted beforehand in such a way that the burner will **START ON LOW FLAME**.

Shortly after switching on the solenoid valve in the fuel supply line, the pressure at port "M" will stabilise and the ignition causes a flame.

An external volume or pressure regulator in the supply line controls the fuel flow of the atomiser. The air or steam pressure at port "A" either is kept constant or under control of a constant differential pressure system.

Interrupting the power supply to the solenoid valve at port "O" and simultaneously switching on the solenoid valve at port "B" leads to blowing the remaining fuel out of the lance. The fuel flow from the atomiser stops after a short time. After this, the air or steam supply to ports "A" and "B" should continue for at least 60 seconds. This cleans the atomiser to prevent blockage due to radiated heat from the furnace.

If firing heavy fuel, we advise mounting a heating device to preheat the lance for those applications where the fuel supply to port "O" often stops during longer intervals. Normally it is sufficient to apply an electrical heating plate just to preheat the connection block at the lance. Four threaded bores in the connection block allow mounting such a heating plate. This heater could work permanently, but it should at least be switched on in time before fuel is supplied to port "O".



## Maintenance

The burnerlance normally does not require any maintenance. Wear or damage of the atomiser and the reverse disc highly depends on fuel quality. The atomiser and the reverse disc are easy to exchange. The lance has no moving parts. After a while some ageing may occur on the o-rings. Complete seal sets are available for replacement.

To exchange the o-ring 18,72x2,62 on the cover, first remove the pressure gauge and then the cover, held by 4 screws. After having cleaned the parts involved, replace the o-ring, put the cover back in place and mount it. Finally, the pressure gauge can be mounted again.

To exchange the inner o-ring 18x2,5, first remove the pressure gauge and then the cover, held by 4 screws. Unscrew the ferrule using an appropriate tool. Use a sharp needle to carefully remove the old o-ring and its remainders from the ring shaped chamber. Avoid damaging the chamber while doing so. After having thoroughly cleaned the ring shaped chamber, one can push the new o-ring in place with a blunt pin. Before re-assembly, make sure all parts involved are undamaged and perfectly clean. Re-assemble the back of the burnerlance in reverse order.