Documentation

The following information sheet illustrates the description below:

12-W601-4G-E Sectional view of the lance with main dimensions

General

The burnerlance 12-A with shut-off needle is especially suitable for use in or on an oil burner and is designed to operate type 12-A… and 15-A… atomisers with compressed air or steam. The spring on the armature pushes the needle in closed position. This ensures a reliable shut-off under all circumstances.

The coil electromagnetically retracts the armature for opening. The armature has a fixed travel, pulling the needle in the correct position when it opens.

During the pre-purge period of the burner, the needle is keeping the central orifice in the atomiser closed. On energising the coil, even after long idle intervals, there is immediate atomisation guaranteeing perfect ignition.

The burnerlance is suitable for supply pressures up to 16 bar and fuel temperatures up to 140°C. The ambient temperature near the coil should not exceed a maximum of 60°C.

Mounting the atomiser

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

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

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

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

Connections

The connections on the block of the lance are marked as follows:

O Fuel supply to the atomiser. A filter having meshes smaller than 50 µm 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.

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, both the external solenoid valve in the supply line and the external volume or pressure regulator are open. The coil operating the needle is currentless. Thus, the spring loaded needle is keeping the central orifice in the atomiser up front 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 needle, make sure the IGNITION IS TURNED ON. In addition, the external regulator and the combustion airflow are to be adjusted beforehand in such a way that the burner will START ON LOW FLAME.

As soon as one switches on the coil operating the needle, the needle retracts and opens. The ignition causes a flame immediately. Only the very first time a delay will occur because of the air on the fuel side of the lance leaving through the atomiser.

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.

Interruption of the power supply to the coil leads to immediate closing of the needle, handled by the spring. The fuel flow from the atomiser stops abruptly.

The air or steam supply to port "A" should continue at least 10 seconds after the needle has been closed. 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. This heater could work permanently, but it should at least be switched on in time before fuel is supplied to port "O" to achieve correct operation of the control system inside the lance.

Maintenance

The burnerlance normally does not require any maintenance. Wear or damage of the nozzle, the swirler and the needle highly depend on fuel quality. The complete atomiser is easy to exchange.

The only moving part in the lance is the needle with the armature. The exchange of the needle can only be done by the manufacturer because this needle always is adapted to the lance during assembly.

After a while some ageing may occur on the atomiser or solenoid o-rings. These o-rings are separately available for replacement.

To exchange the solenoid o-ring, first make sure the coil is currentless. Remove the coil held by a nut. Now unscrew the solenoid housing from the lance. The armature and needle stay in place.

Before re-assembly, make sure all parts involved are undamaged and perfectly clean. Place the new o-ring in the sharp edged groove in the connection block ensuring that it will not be damaged or partly cut off during further assembling. Push the solenoid housing straight against the o-ring and tighten the nut by hand. Tighten it just slightly with a spanner.

Now push the coil on the solenoid housing and tighten the nut by hand. Tighten it just slightly with a spanner.

