

AIR POWERED INTERNAL SWD FOR 4 LITRE SAMPLER

- ◆ **REMOTE PUSH BUTTON OPERATION**
- ◆ **MINIMAL OPERATOR FUEL EXPOSURE**
- ◆ **REDUCED SYRINGE CONSUMPTION**
- ◆ **PRECISE SAMPLE VOLUME**
- ◆ **ACCURATE SWD RESULT**



Introduction and Existing Procedures.

Since the introduction of the Aljac 4 Litre Sampler there have been various approaches to the problem of carrying out the water detector test.

Initially, the lid was opened and the syringe/capsule was dipped into the fuel just as it had been with traditional open sample jars, but this compromised the closed sampling concept and negated some of the advantages of it. The procedure was refined with the development of the Internal SWD fitting which simplified the method of manipulating the syringe and but was still not ideal.

This was followed by the development of the External SWD fitting which is located on the inlet of the sampler and removed the need to open the lid because with this method the syringe/capsule was used to open an internal self sealing poppet valve to allow fuel into the capsule/syringe and carry out the test. However, this procedure has also proved not to be a totally problem free. In this device the capsule is not actually immersed in the fuel, and this has a number of drawbacks. There is a small dead volume of fuel within the

poppet valve which can trap water and give a false (poor) result. It is also possible to draw air into the syringe if the seal between the capsule and poppet valve surface is not 100% perfect (which is very difficult to achieve). The problem is further compounded because during this test method the syringe is nearly horizontal so it is impossible to judge the actual volume of fuel in the syringe against the graduations. Therefore, in practice it is common for less than 5ml of fuel to be taken which will give an inaccurate SWD test result. In addition the poppet valve can leak due to wear or contamination and result in a fuel leakage.

We developed our Air Powered SWD to offer a new approach to the whole procedure.

It is clear that the most representative SWD test is obtained by the capsule being immersed directly into the main fuel sample, there is then no issue with dead volumes and unrepresentative fuel properties. It is also desirable to make the whole test more user friendly and reduce the consumption of syringes. So we set out with these objectives in mind when we developed our Air Powered SWD.

Description and Operating Method.

Our Air Powered SWD consists of a graduated plastic tube which is permanently fixed to the sampler hinged lid, close coupled to a vacuum generator which creates a vacuum in the tube when air pressure is applied to the 6 mm inlet connection.

The sampler is filled with fuel as normal, the lid is opened, a water detector capsule is fitted to the end of the graduated plastic tube and the lid is closed so that the water detector capsule is below the surface of the fuel inside the sampler. Air is fed to the vacuum generator from the vehicle air system through a hold open 3/2 pneumatic valve (lever or push button operated, spring return). This creates a vacuum inside the graduated plastic tube and draws fuel through the capsule. When the required 5ml of fuel has passed through the capsule into the tube the air supply is removed by releasing the pneumatic valve. The operation takes approximately 20 to 30 seconds. The sampler lid is then opened and the capsule is removed and checked. The lid is closed and the jar emptied as normal, the fuel in the plastic tube then drains into the sampler under gravity.

Our new approach has a number of advantages. The capsule is immersed directly in the fuel so there is no dead volume and the test is truly representative. The lid is only open momentarily to fit and remove the capsule from the syringe so there is minimal operator exposure to the fuel and minimal possibility of fuel contamination from the elements. In addition, because the plastic tube does not rely on seals and pistons to draw the fuel volume it very seldom need replacing, so there is no ongoing syringe consumption.

The operator just has to operate a button or lever to carry out the test which is much easier than manipulating a syringe when wearing thick gloves. It was also found that as the fuel level rises in the plastic tube, the fuel/air interface has no bubbles present so it is much easier to judge the true fuel volume than it is when using a conventional syringe, especially when the syringe is horizontal as in the External SWD procedure.

Our new development has been highly successful and it is either available as an option fitted to new Aljac 4 Litre samplers, or as a retro fit kit for fitment to existing Aljac samplers already in service.

We are also able to supply the ancillary items as an installation kit (See Typical Installation Schematic).

Standards.

The equipment has been subjected to a full risk assessment which included the requirements of the EC directives and harmonised standards. In accordance with European legislation, it has been concluded that the equipment should not carry a CE mark.

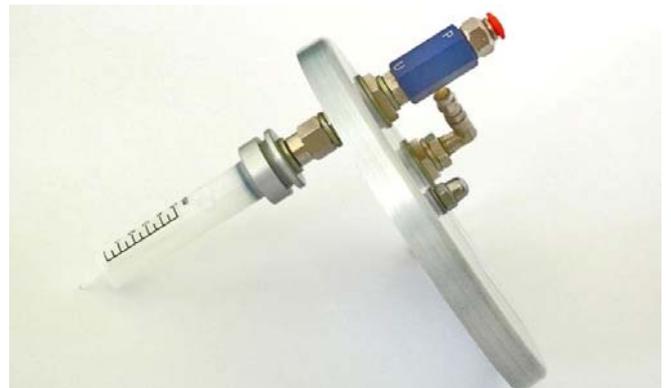
How to Order.

Air Powered SWD as Option. Part No.6007233252.

Air Powered SWD Retro Fit (including Sampler Lid). Part No. 6007233253.



Graduated Plastic Tube Retro Fit Assembly
(replaces original glass tube). Part No. 6007233259.



Typical Installation Schematic Diagram.

