



ARCH PUMP – Supplementary Operating Notes

Air Line and Fluids Line:

The pump fittings for air and fluid lines are 3/8" barbs. For normal applications, standard 3/8" ID hoses are suitable for both lines.

Locate the controller close to the well head so to minimise the length of air line for the exhaust cycle.

Ensure the filter/regulator is installed in the air line prior to the controller. Timers and valves in the controller need clean dry air for optimum performance.

To maximise the pump's capability in very deep applications, two measures can be taken

1. step up both air and fluid lines to 1/2" ID; and/or
2. install the optional Quick Exhaust (QE) valve. This enables much faster dumping of air from the pump chamber and air line than is possible through the normal air discharge point in the controller. Pump filling time ("off/intake" cycle) is therefore reduced and fluids flow rate per minute is increased. The QE valve is only necessary in very deep applications or if the controller has to be located a long distance from the well head. Installation of the QE valve is most effective if plumbed into the air line down the well (ensuring it remains above the standing water level) but this can only be done in 100mm+ wells and can make handling of hoses etc more difficult. Alternatively, it can be plumbed near the controller, in the air-to-pump line.

Controller Operation

The function of the controller is to obtain an equilibrium between the pump fill time ("off/intake") and discharge time ("on/discharge"), aiming to have a consistent pulse flow of fluids without air.

The ops manual should be self explanatory. Note on page 6 where it refers to a non-functional zone between 30(F) and 0 – the dial can be turned 360 degrees but if you happened to turn it all the way, moving passed 30(F) and back towards zero the timer does not function.

A guide to achieving equilibrium flow is:

- 1) after lowering pump into position, start with a long "off/intake" time of say 15(B), and a short "on/discharge" time of say 5(A) or less.
- 2) Optimise the "on/discharge" time first:
 - a) steadily increase the "on/discharge" time until air starts coming through the fluids line. Allow some time between adjustments to account for fluid/air passage along the length of hose in use
 - b) slowly decrease the "on/discharge" time until no more air is evident in the fluids line
- 3) Finally, optimise the "off/intake" time:
 - a) slowly decrease the "off"/intake" time until air starts blowing through the fluids line again
 - b) slightly increase the "off/intake" time until no more air is in the fluids line

Note, this will represent equilibrium for maximum performance at the given air pressure and head above the pump. As drawdown occurs the head pressure will reduce so "off/intake" time will need to be increased to find the new equilibrium. Once stabilised at the stable drawdown level the settings can be left for this well - even if removing the pump and restarting later. When restarting, it will just take some time to find its equilibrium position as previously established.

End