

# Glockemann Aquarius Pump Set Up

## Drive Head or 'drop'

A drive head greater than those outlined in the 'Performance Statistics' tables for each model should not be used. It is a common misconception that using a drive head higher than the recommended maximums will increase power and therefore increase output. In fact, the pump will be less efficient because the pump return spring will not be able to push the diaphragm and diaphragm plate back to its original position, thus shortening the piston stroke and lessening the output. Using higher than recommended drive heads will also put excessive stress on the diaphragm and other components which will affect reliability.

## Drive Tubes

The Glockemann pump is designed to be used with the drive tube diameters outlined in the 'Performance Statistics' tables, in the case of the Aquarius a 65mm diameter (2 1/2 inch). The ideal drive tube length is 6 to 8 times the drive head amount. e.g. drive head 1.0 metre = 6 to 8 metres drive tube length. Small variations will have little effect; however, if the drive tube needs to run a substantial distance to obtain sufficient drive head, the long drive tube method (sect.2 page 1. 'Installation Guide') should be used. This requires the use of a 'T' piece pipe fitting positioned at the ideal drive tube length from the pump and a section of uncapped tube standing upright from the 'T' piece at least as high as the level of the water at the drive head. All drive tubes may use elbow fittings to navigate obstacles or to position the pump for flood protection. The angle of the slope is not important as long as there is a constant slope to prevent air pockets forming.

## Pump Position

The ideal pump position is semi-submerged in the creek or stream. Having the pump semi-submerged will prevent air being drawn into the piston section or rear exhaust valve and allow the inlet filter to be placed immediately on the inlet check valve for unrestricted water induction into the piston. If it is not possible to position the pump in the stream flow, the alternative is placing the pump in a container on the bank of the stream.

## Drive Tube Strainers and Inlet Filters

A free and unrestricted flow of water into the drive tube and inlet valve is essential. The drive tube strainer is required to stop larger pieces of foreign matter from entering the mouth of the drive tube. A number of variations may be used for drive tube strainers. The most common is a length of tube of the same diameter as the drive tube, say one to one and half metres long, capped at one end and with a series of slots cut along its length using an angle grinder. There should be enough slots to allow the drive tube to draw as much water as it needs in a free and unrestricted manner. Another

method is to form a 'cage' of say, 3/8" bird wire, into a ball or other shape and attach it to the mouth of the drive tube.

The inlet filter should preferably be fitted directly to the end of the inlet line. A filter is supplied with each pump; however, more elaborate filters may be used where the water to be drawn into the pump is dirty or contains grit or sand. If such a filter is fitted it should be of sufficient size to allow the water to be drawn in a free and unrestricted manner. The drive tube strainer and inlet filter should be cleaned from time to time. The inlet must be mounted above the height of the pump's resting level. This can be achieved by securing the inlet line to the drive line.

## Diaphragm

The diaphragm of the Aquarius pump is a replaceable item; however, it should perform its task for a number of years of normal operation without problem. The most common cause of diaphragm failure occurs when the pump is allowed to run 'unloaded'; that is, when the piston bore loses prime and an air pocket is formed in the cylinder head of the pump or the delivery pipe. When this occurs the piston stroke will extend and the diaphragm plate may 'bottom out' against the back of the piston bore, the diaphragm will bulge dramatically and eventually, fail. Positioning the pump underwater is a preferred method of preventing loss of prime. At setup when the delivery pipe is not yet filled it is advisable to keep the pump at low throttle to prevent a similar situation occurring. The diaphragm is readily available from Glockemann or from your local distributor. In the event a factory manufactured diaphragm is not available, the diaphragm may be replaced by cutting a large size tractor inner tube using the old diaphragm as a template - tractor tube diaphragms should be two or three layers thick.

## Diaphragm

The delivery pipe should be of sufficient strength to deal with the delivery head pressure - check with your local irrigation supplier. The delivery pipe should also be of sufficient diameter to allow a free and unrestricted flow, generally 25mm (one inch) to 50mm (2 inch) pipe is required depending on the amount of water which will be pumped. Placing a check valve in the delivery pipe approximately ten metres from the pump, or above the flood line, is useful to prevent the pipe emptying if the pipe is detached for regular maintenance or during a flood.

If Drive Tube is say 30 m longer than in the table you have to fit a T Piece 6 m in front of the pump

