

Horticultural Spraying Specialists

Diaphragm pumps







Most sprayers built in the last 40 or so years have used Diaphragm pumps to provide positive pressure to the spraying system.

These pumps usually fall into two categories: 0-15/20 bar (or what we call low pressure Bp pumps), and high pressure 0-40/50 bar pumps. We have access to one of the best ranges of these diaphragm pumps, from the Italian manufacturer, Annovi Reveberi (or AR for short). Don has been supplying these pumps to growers for 38 years and knows a thing or two about them. Below is a summary of the most common models. For more model specific information, give us a call.

So if your pump is on its last legs and you need a replacement, be sure to contact us. Likewise, if you want a spare pump on the shelf to facilitate a quick turnaround if you have a breakdown, call us.

Options include:

<p>Low pressure Bp Poly</p> 	<p>Low pressure Bp pumps – 0-15 bar pressure range</p> <ul style="list-style-type: none"> ⇒ Ideal for boom spraying, or low-pressure systems typically spraying in the 5-12 bar range for horticultural use, 1-6 bar for booms ⇒ Poly heads & manifolds make these pumps “liquid fertiliser ready” – meaning the surfaces that come into contact with these products will not break down the pump components ⇒ Range from 80 to 410 litres per minute output (open flow rating)
<p>Low pressure Bp coated alloy</p> 	<p>Low pressure Bp pumps – 0-20 bar pressure range</p> <ul style="list-style-type: none"> ⇒ Ideal for boom spraying, or low-pressure systems typically spraying in the 5-12 bar range for horticultural use, 1-6 bar for booms ⇒ Alloy coated heads & manifolds on this range have been in use for more than 50 years – it’s a well proven treatment which avoids the chemicals used in horticulture and agriculture coming into contact with the alloy. ⇒ Range from 70 to 280 litres per minute output (open-flow rating)
<p>High pressure brass & alloy</p> 	<p>High pressure pumps – 0-40/50 bar pressure range</p> <ul style="list-style-type: none"> ⇒ Ideal for higher pressure horticultural use, typically in the range of 15-30 bar pressure – often used on airblast sprayers for spraying tree crops ⇒ Available in annodised alloy or with brass heads and manifolds – depending on the use intended. Copper formulations are hard on alloy, so brass is a better choice in that situation ⇒ Range from 30 to 200 litres per minute output (open-flow rating)
<p>Motorised models</p> 	<p>Medium pressure motorised pumps – 0-20/40 bar pressure range</p> <ul style="list-style-type: none"> ⇒ Ideal for boom spraying where a PTO drive is not practical, or for gun spraying where the higher pressure 40-bar pumps are best ⇒ Honda-powered GX200 petrol drive, via an integrated gearbox provide years of use ⇒ Very popular in nurseries, glasshouses, on farms and for pest control users

Useful information about diaphragm pumps.

Diaphragm pumps are what they call “positive displacement”. They have cylinders, pistons and valves and work in a similar way to a combustion engine – without the combustion of course – and they pump liquid, not a combustible fuel mixture.

The pump shaft usually rotates at 400-540 RPM (most are 540 maximum PTO rated) and drives the pistons up and down in the cylinders, like a car engine. Above the pistons sit an impervious diaphragm (hence the description “diaphragm pumps”) which separates the liquid from the oil and moving parts of the pump. The spring-loaded inlet and outlet valves are operated simply by suction and pressure in each stroke. Simple!

Different diaphragm materials are available for different scenarios – we can help with advice on what’s best for which application. Newer materials have emerged in recent times that are useful for a wider range of applications.

Because diaphragm pumps are positive displacement, it’s **imperative** a pressure relief valve (PRV) is in the system on the pressure side of the pump. This ensures the pump cannot be “dead-headed” – if that happens the pump will simply blow apart. Not ideal. Usually this PRV also acts as the primary regulating valve, ensuring the right amount of flow downstream is available for the pump to work in the best range, at the right pressure, for the job at hand.

All pumps are rated at their “open flow” capacity. This means no pressure demand, simply water in, water out. However, once you demand pressure of a pump, the flow drops considerably. Some bypass is generally required via the PRV and to drive agitation in the tank.

A rough rule of thumb can be used to work out your pump size as follows - example:

- ⇒ Maximum output at nozzles (total, all nozzles going) = 50 litres per minute at 10 bar pressure
- ⇒ Agitation (x 2 in the tank) at 8 L/min each = 16 L/min
- ⇒ Total flow needed under pressure = 66 L/min
- ⇒ Pump size needed to supply flow requirement = $66 \times 2 = 132$ litres per minute (minimum)
- ⇒ Suggest either a 140 or 160 litre per minute pump be selected in the 0-20 bar range of models

Essentially, the multiplication factor of two times maximum output for nozzles and agitation takes care of the pressure requirement and to allow for a good range of application.

Remember – if you need more information, call us or email us:

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