

# CELEBRATING 50 Years of Chemical & Equipment Company



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## About Us

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*The Energy Manufacturing facility in Southwell,  
Nottinghamshire.*



Energy is a family owned business established in 1979. We have developed a good relationship with our customers and their ultimate satisfaction with our products and service is the key to the company's success. As one of the few remaining UK based manufacturers of industrial pumps, we shall continue to persevere with traditional engineering skills and provide an on-going outlet for quality British products.

*Energy 460mm Hydraulic Ram Pump with Camel Ball  
Valves ready for shipping to Singapore.*



Energy Pumps design and manufacture an extensive range of Ram and Diaphragm pumps primarily for the Waste Water Treatment industries and developed through more than 30 years of experience within the industry. We have gained, over the years, an enviable reputation for building equipment that is reliable, energy efficient, low maintenance and proving durable over many years.

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*Energy Mastiff Diaphragm Pumps Duty/Standby.*

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Energy Pumps attention to detail has always been central to the manufacture and supply of our equipment. We machine all the various castings and parts that make up the pumps, "in house", and the pumps are then assembled by a small team of dedicated and skilled staff. In addition to this we work closely with our clients to ensure that the position of the pump and layout of the pipework is designed to provide the most efficient pumping conditions to get the best performance from the pump.

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*Energy 270mm Mechanical Ram Pumps with Mallard Bullfrog Valves.*

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Energy Pumps has developed a reputation over the years for supplying some of the most cost effective, efficient and reliable pumping equipment throughout the country. Our pumping solutions apply to various industries including water and waste water, pottery, food waste, chemical and other industries. We have established Framework and supply agreements with Scottish, Thames, Wessex, Northumbrian and Yorkshire Water for the supply of Ram and Diaphragm pumps and are working to secure agreements with other major Utility companies.

## Maxi Diaphragm Pump Specifications

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### General

Pump Type: ..... Maxi  
 Gearbox Type: ..... R37  
 Valve Type: ..... Maxi Bullfrog  
 Inlet Size: ..... 50mm  
 Outlet Size: ..... 50mm  
 Total Pump Weight: ..... 38-46 kg  
 Gearmotor Weight: ..... 16-23 kg  
 Noise: ..... 62 dB

### Construction

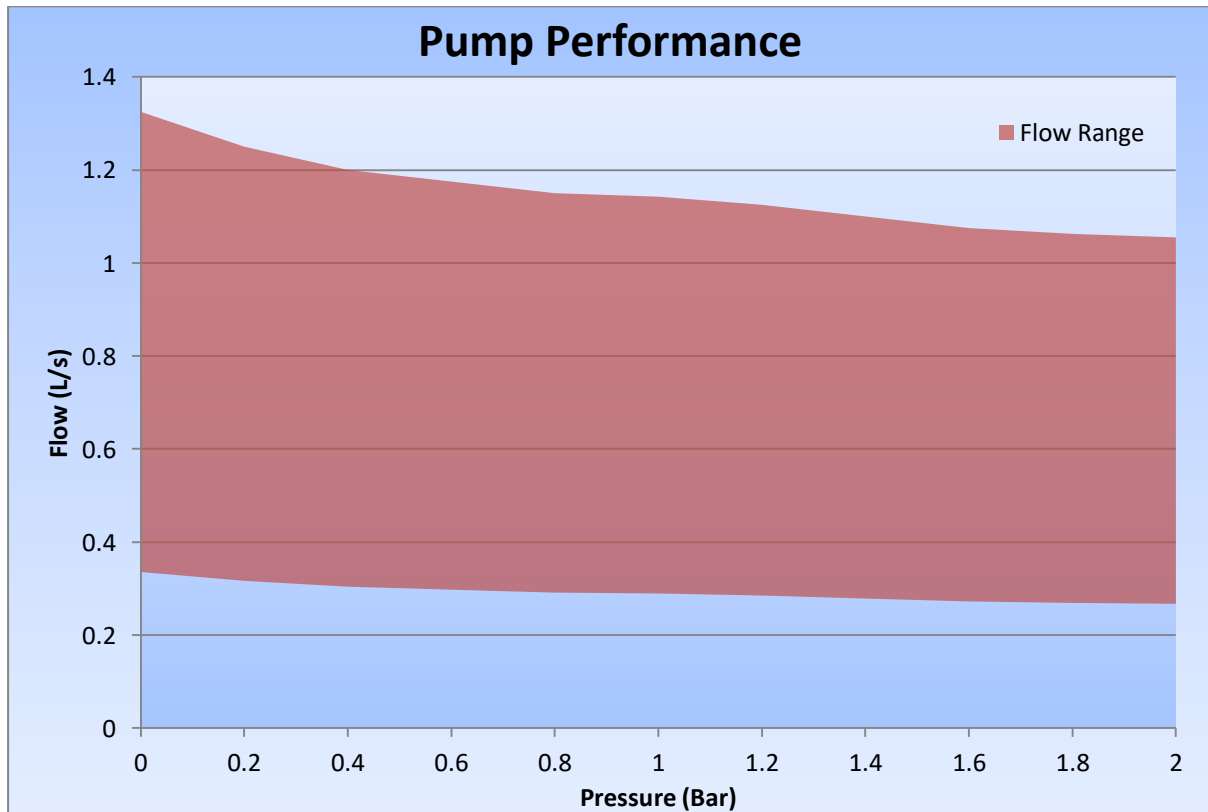
Feet: ..... Galvanised Steel  
 Pump: ..... Aluminium  
 Diaphragm: ..... Neoprene  
 Valves: ..... Neoprene

### Performance

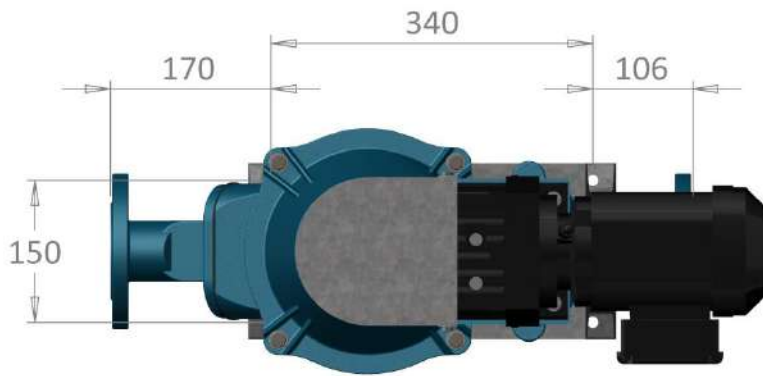
Speed: ..... 19-75 RPM  
 Maximum Flow Rate: ..... 0.3-1.3 l/s  
 Maximum Pressure: ..... 2 Bar

### Motor Specifications

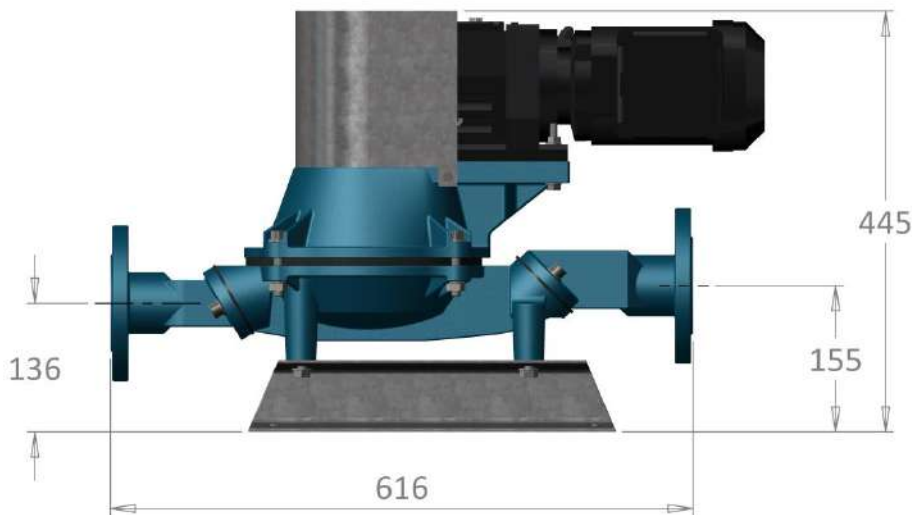
Power: ..... 0.25-0.75 kW  
 Frequency: ..... 50 Hz  
 Cyclic Duration factor: ..... S1  
 Voltage: ..... 230/400 v Delta/Star  
 Current: ..... 1.26/0.72-3.05/1.75 A  
 Thermal Class: ..... 155/F  
 Efficiency Class: ..... IE3  
 Thermistors fitted: ..... Optional  
 Heater fitted: ..... Optional



# Maxi Bullfrog GA



Flow →



All dimensions are approximate and are for guidance only. Please contact Energy if you need specific dimensions.

Approximate weight: 39.81Kg

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Email: sales@energypumps.co.uk

Drawing Date  
26 September 2014

## Major Diaphragm Pump Specifications

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### General

Pump Type: .....Major  
 Gearbox Type: ..... R47  
 Valve Type: ..... Mallard Bullfrog  
 Inlet Size: ..... 80/100mm  
 Outlet Size: ..... 80/100mm  
 Total Pump Weight: ..... 92-106 kg  
 Gearmotor Weight: ..... 19-33 kg  
 Noise: ..... 65 dB

### Construction

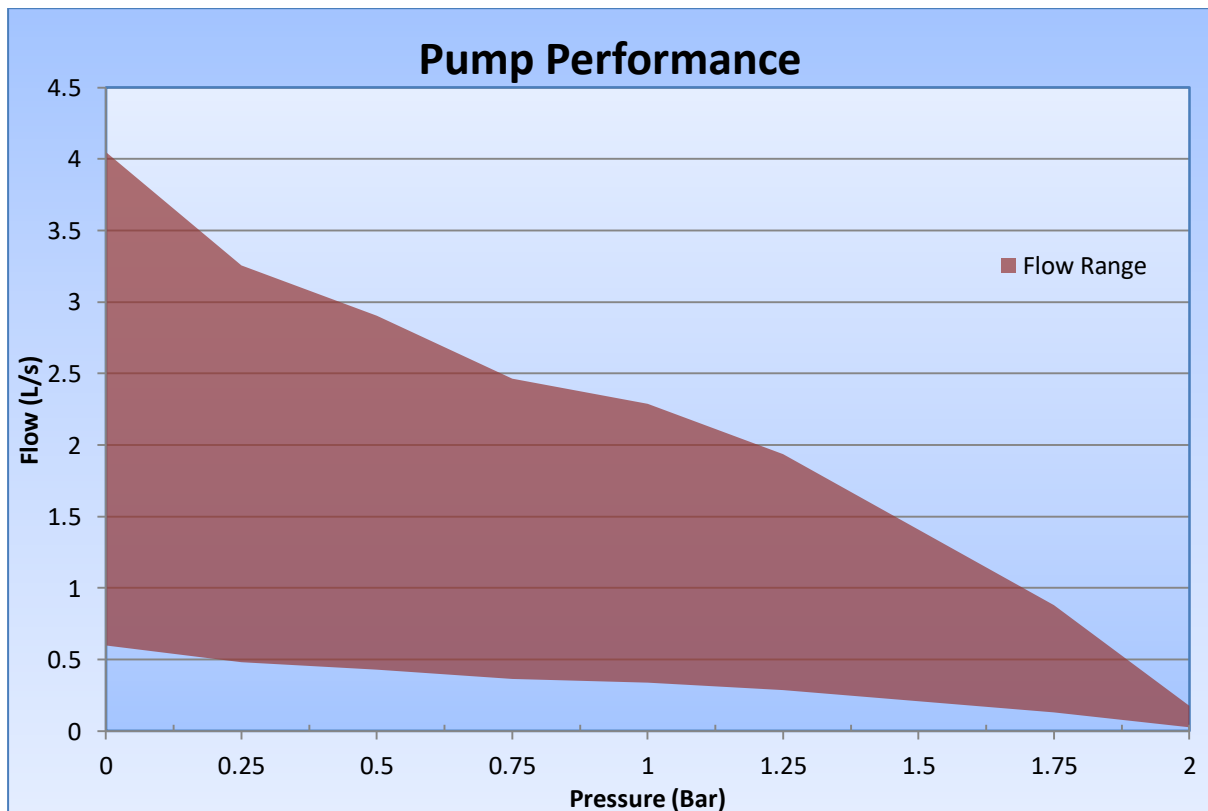
Feet: ..... Galvanised Steel  
 Pump: ..... Aluminium  
 Diaphragm: ..... Neoprene  
 Valves: ..... Neoprene

### Performance

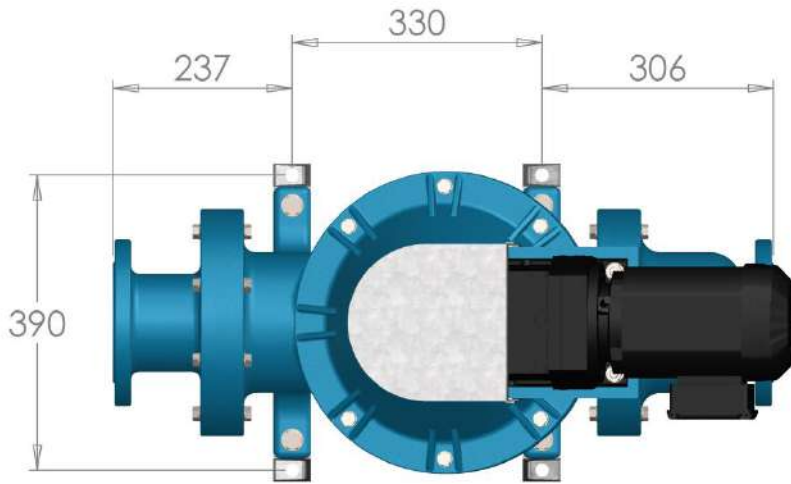
Speed: ..... 13-88 RPM  
 Maximum Flow Rate: ..... 0.6-4 l/s  
 Maximum Pressure: ..... 2 Bar

### Motor Specifications

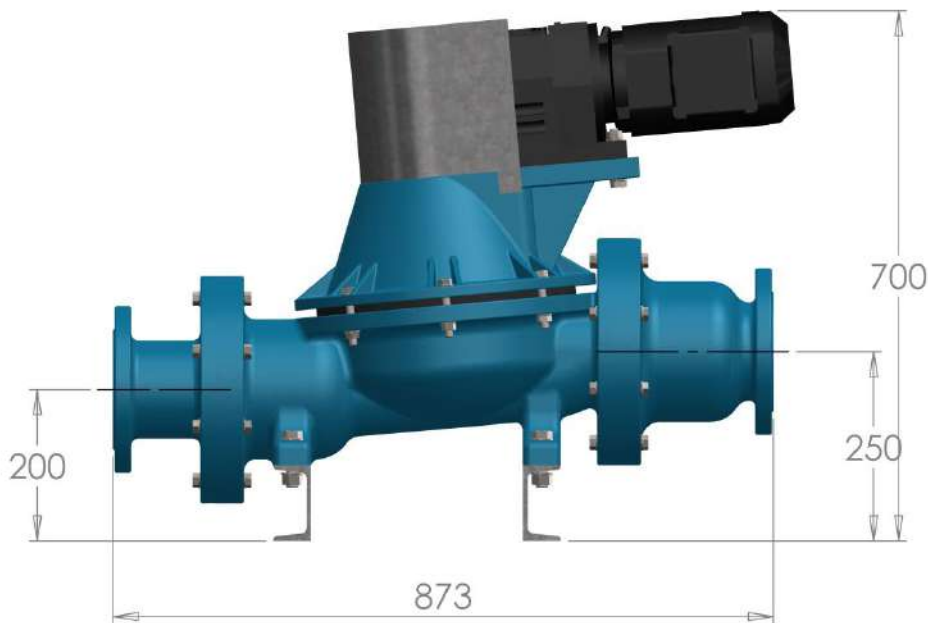
Power: ..... 0.25-1.5 kW  
 Frequency: ..... 50 Hz  
 Cyclic Duration factor: ..... S1  
 Voltage: ..... 230/400v Delta/Star  
 Current: ..... 1.19/0.68-5.8/3.35A  
 Thermal Class: ..... 155/F  
 Efficiency Class: ..... IE3  
 Thermistors fitted: ..... Optional  
 Heater fitted: ..... Optional



# Major Mallard GA



Flow →



All dimensions are approximate and are for guidance only. Please contact Energy if you need specific dimensions.

Approximate weight: 103.02Kg

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# Mastiff Diaphragm Pump Specifications

## General

Pump Type: ..... Mastiff  
 Gearbox Type: ..... R77  
 Valve Type: ..... Mallard Bullfrog  
 Inlet Size: ..... 80/100mm  
 Outlet Size: ..... 80/100mm  
 Total Pump Weight: ..... 186-206 kg  
 Gearmotor Weight: ..... 41-61 kg  
 Noise: ..... 65 dB

## Construction

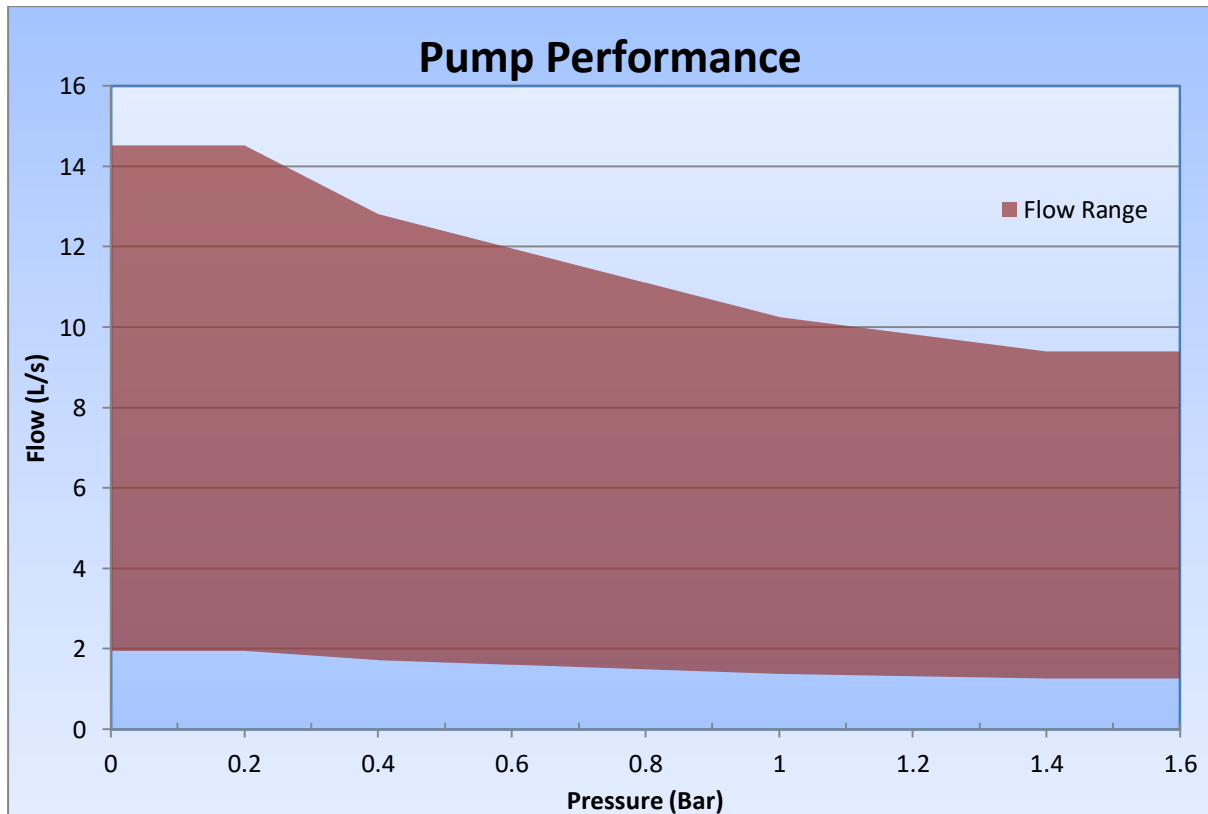
Feet: ..... Galvanised Steel  
 Pump: ..... Aluminium  
 Diaphragm: ..... Neoprene  
 Valves: ..... Neoprene

## Performance

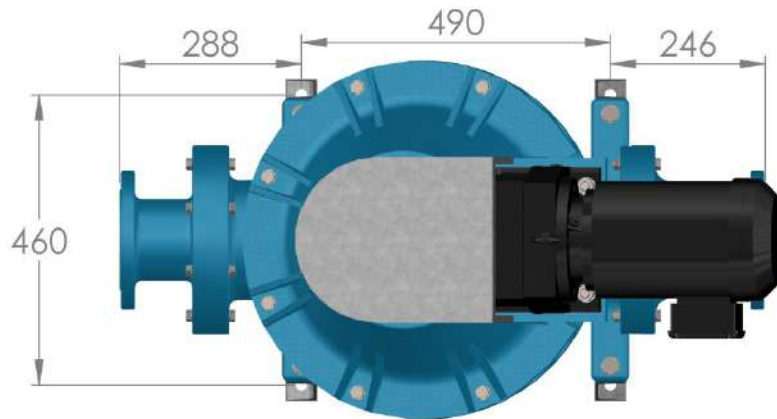
Speed: ..... 11-82 RPM  
 Maximum Flow Rate: ..... 1.9-14.5 l/s  
 Maximum Pressure: ..... 1.5 Bar

## Motor Specifications

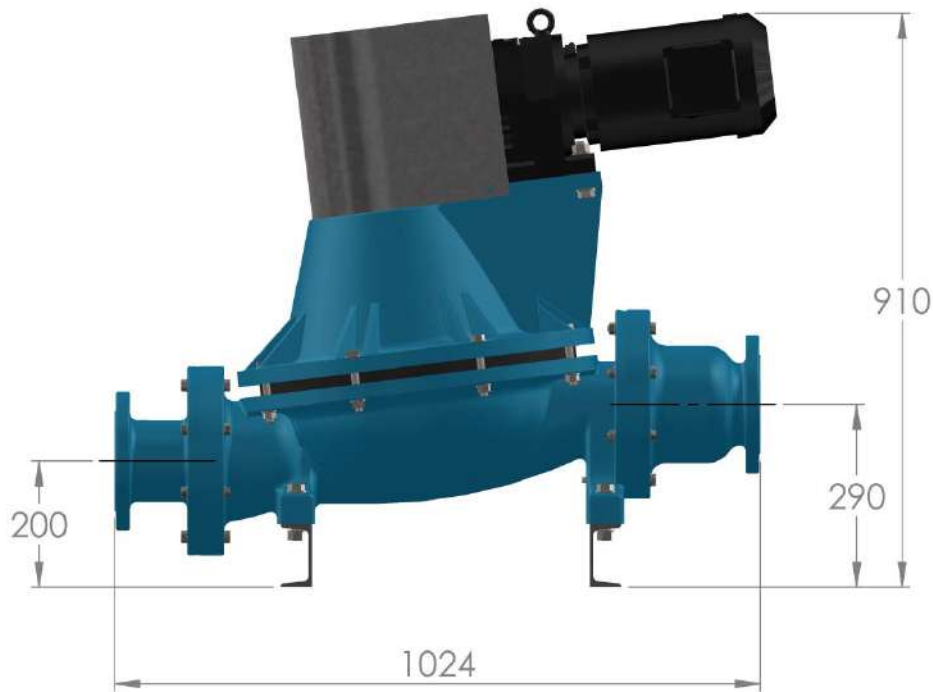
Power: ..... 0.55-3 kW  
 Frequency: ..... 50 Hz  
 Cyclic Duration factor: ..... S1  
 Voltage: ..... 230/400v Delta/Star  
 Current: ..... 2.7/1.55-10.8/6.2A  
 Thermal Class: ..... 155/F  
 Efficiency Class: ..... IE3  
 Thermistors fitted: ..... Optional  
 Heater fitted: ..... Optional



# Mastiff Mallard GA



Flow →



All dimensions are approximate and are for guidance only. Please contact Energy if you need specific dimensions. Approximate weight: 191.36Kg

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## Mastiff HD Diaphragm Pump Specifications

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### General

Pump Type: ..... Mastiff HD  
 Gearbox Type: ..... R77  
 Valve Type: ..... Mallard Bullfrog  
 Inlet Size: ..... 80-100mm  
 Outlet Size: ..... 80-100mm  
 Total Pump Weight: ..... 198-227 kg  
 Gearmotor Weight: ..... 46-75 kg  
 Noise: ..... 65 dB

### Construction

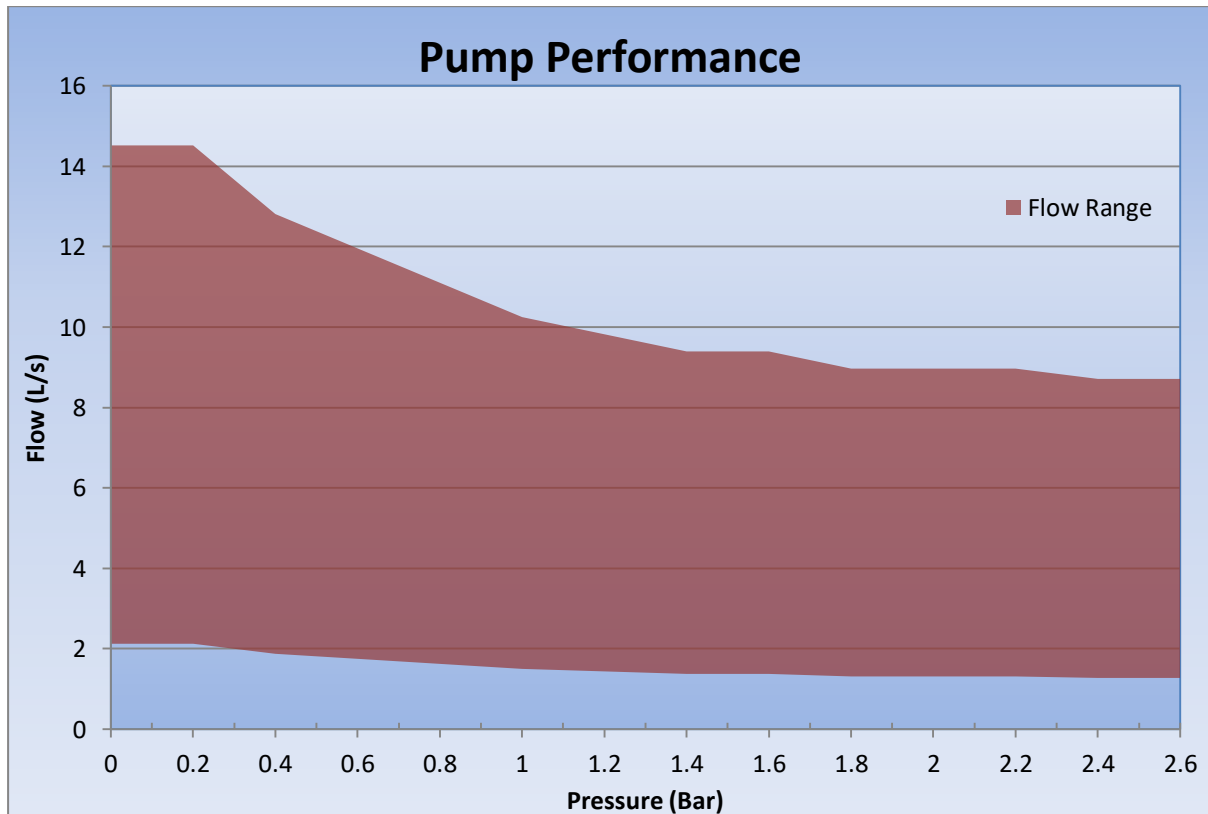
Feet: ..... Galvanised Steel  
 Pump: ..... Aluminium  
 Diaphragm: ..... Neoprene  
 Valves: ..... Neoprene

### Performance

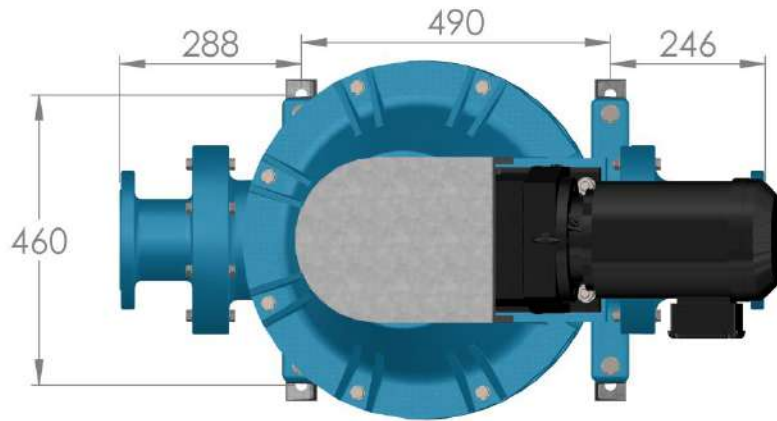
Speed: ..... 12-82 RPM  
 Maximum Flow Rate: ..... 2.1-14.5 l/s  
 Maximum Pressure: ..... 2.5 Bar

### Motor Specifications

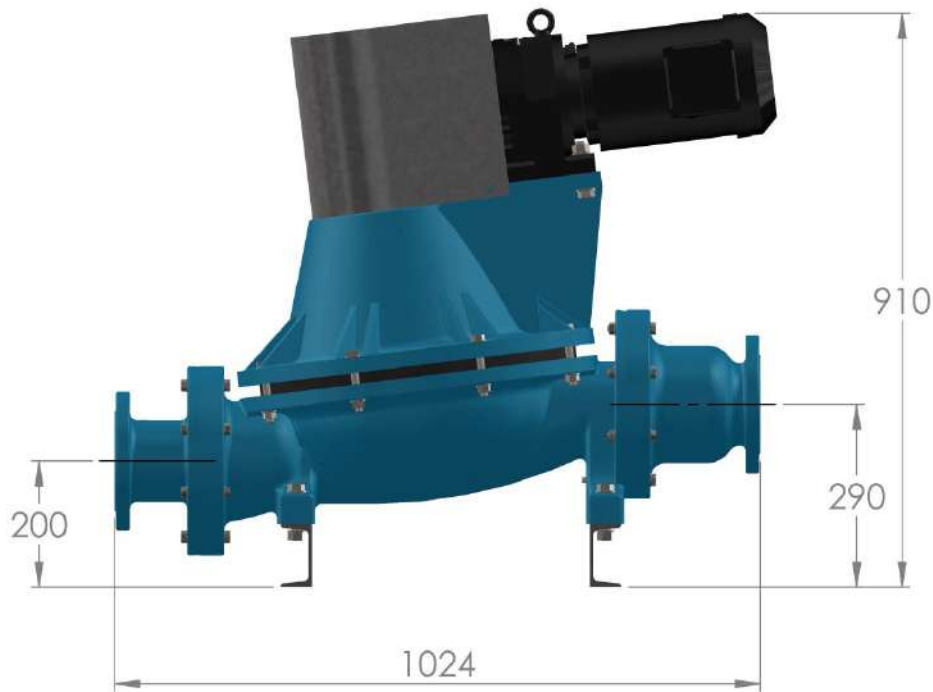
Power: ..... 0.75-4 kW  
 Frequency: ..... 50 Hz  
 Cyclic Duration factor: ..... S1  
 Voltage: ..... 230/400v Delta/Star  
 Current: ..... 2.9/1.68-13.9/8A  
 Thermal Class: ..... 155/F  
 Efficiency Class: ..... IE3  
 Thermistors fitted: ..... Optional  
 Heater fitted: ..... Optional



# Mastiff HD Mallard GA



Flow →



All dimensions are approximate and are for guidance only. Please contact Energy if you need specific dimensions. Approximate weight: 197.73Kg

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# Mallard Ram Pump Specifications

## General

Pump Type: ..... 240/270mm Mallard Ram  
 Gearbox Type: ..... R87  
 Valve Type: ..... Mallard Bullfrog  
 Inlet Size: ..... 80/100mm  
 Outlet Size: ..... 80/100mm  
 Total Pump Weight: ..... 500 kg  
 Gearmotor Weight: ..... 79-105 kg  
 Noise: ..... 68 dB

## Construction

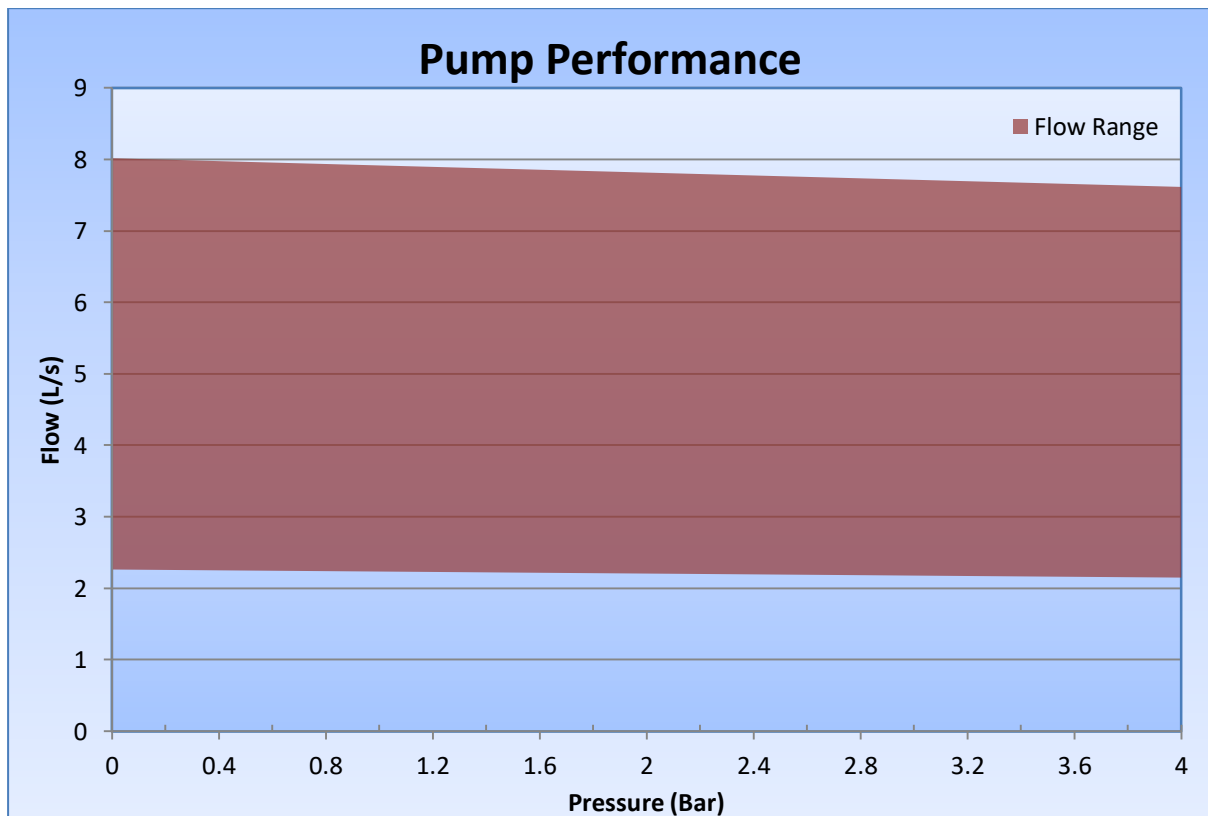
Frame: ..... Galvanised Steel  
 Pump: ..... Aluminium  
 Ram: ..... Hard Chrome Plated Steel  
 Valves: ..... Neoprene

## Performance

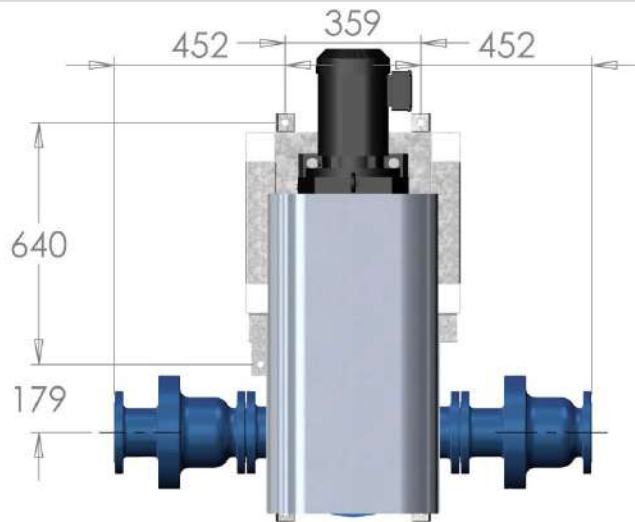
Speed: ..... 15-42 RPM  
 Maximum Flow Rate: ..... 2.3-8 l/s  
 Maximum Pressure: ..... 3Bar

## Motor Specifications

Power: ..... 1.5-4 kW  
 Frequency: ..... 50 Hz  
 Cyclic Duration factor: ..... S1  
 Voltage: ..... 230/400v Delta/Star  
 Current: ..... 5.8/3.35A-13.9/8A  
 Thermal Class: ..... 155/F  
 Efficiency Class: ..... IE3  
 Thermistors fitted: ..... Optional  
 Heater fitted: ..... Optional

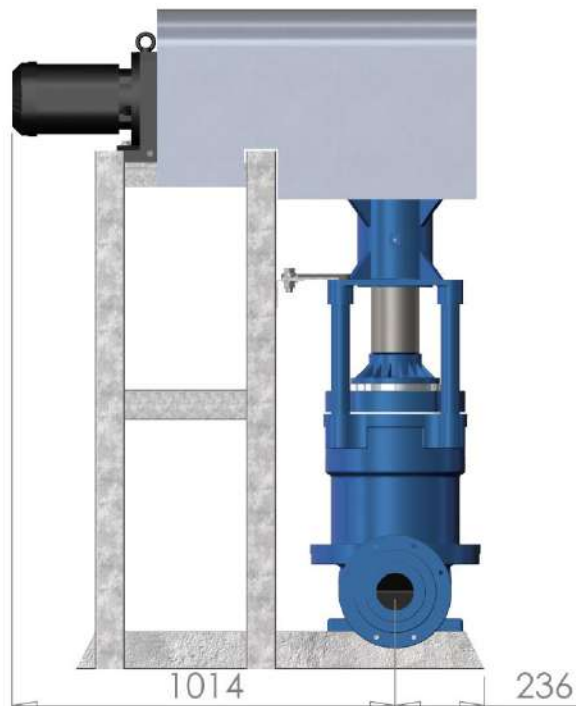
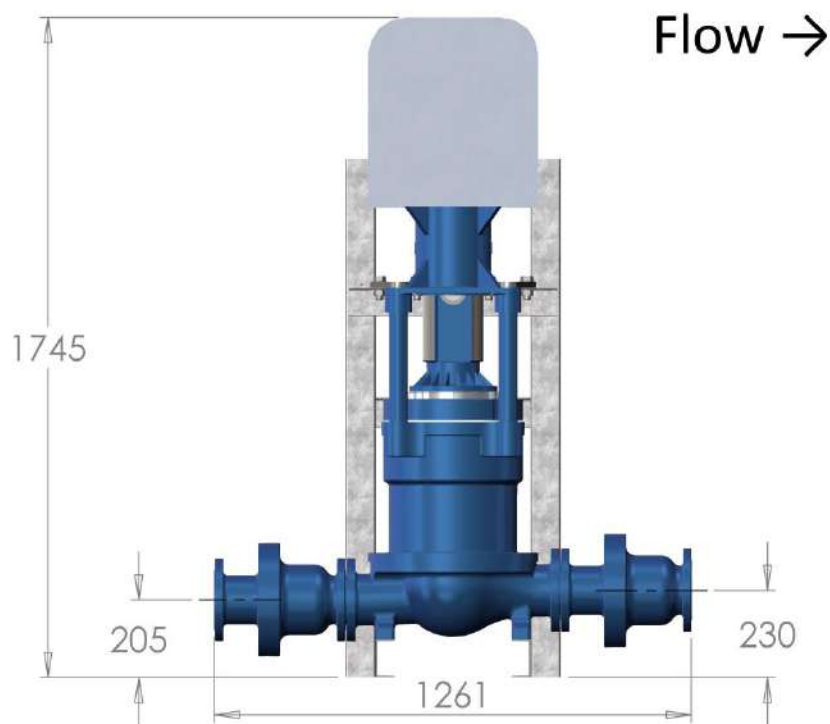


# Mallard Mechanical Ram GA



All dimensions are approximate and are for guidance only. Please contact Energy if you need specific dimensions.

Approximate weight: 463.09Kg



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## Mallet Ram Pump Specifications

### General

Pump Type: ..... 240-480mm Mallet Ram  
Power Unit: ..... Hydraulic Power Pack  
Valve Type: ..... Camel Ball  
Inlet Size: ..... 100/150mm  
Outlet Size: ..... 100/150mm  
Total Pump Weight: ..... 500-1600 kg  
Noise: ..... 78 dB

### Construction

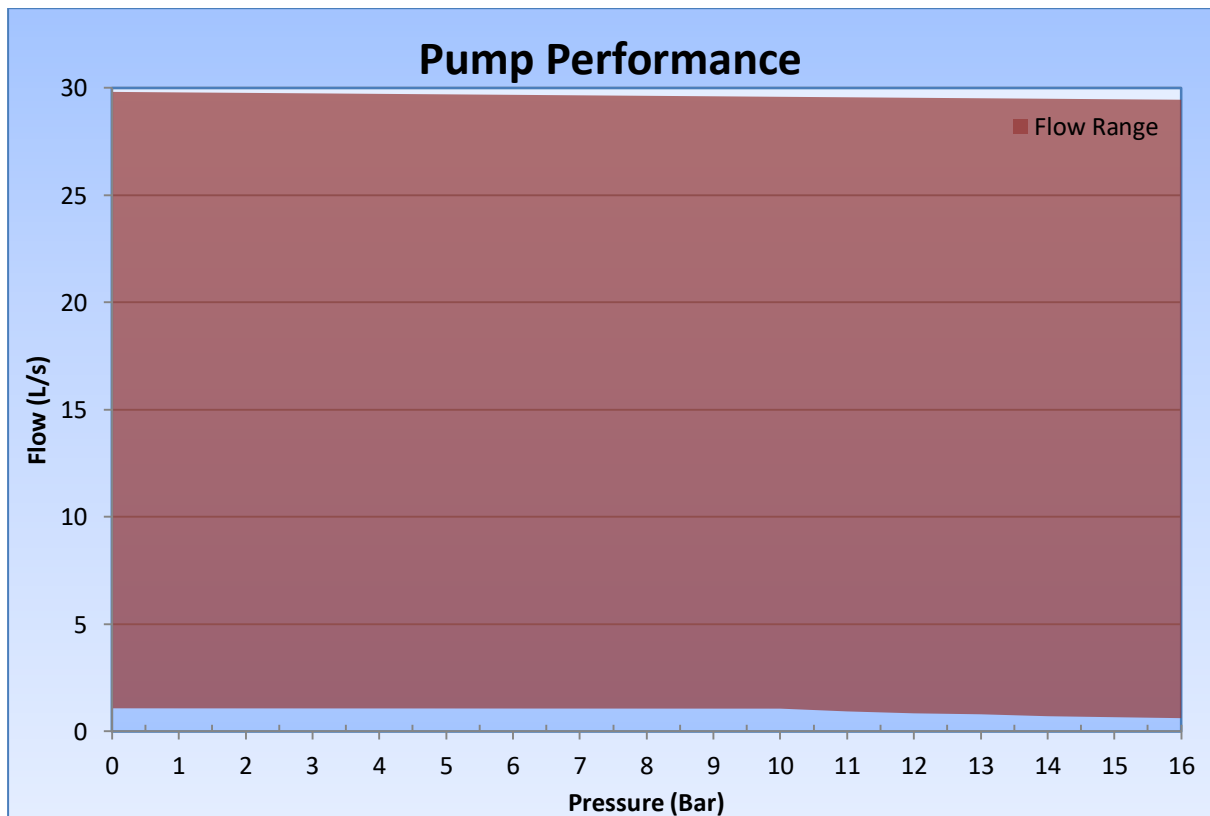
Pump: ..... SG Iron  
Ram: ..... Hard Chrome Plated Steel/  
Metallised Ceramic  
Valves: ..... SG Iron  
Polypropylene, Resin/Fibre Composite

### Performance

Speed: ..... 6-30 SPM  
Maximum Flow Rate: ..... 1.1-30 l/s  
Maximum Pressure: ..... 16 Bar

### Power Pack Specifications

Power: ..... 3-132 kW  
Frequency: ..... 50 Hz  
Motor Cyclic Duration factor: ..... S1  
Voltage: ..... 230/400v 400/690v Delta/Star  
Current: ..... 10.8/6.2A-230/133A  
Motor Thermal Class: ..... 155/F  
Motor Efficiency Class: ..... IE3  
Off-line Cooler: ..... 0.55-3 kW  
Proportional Valves: ..... Yes

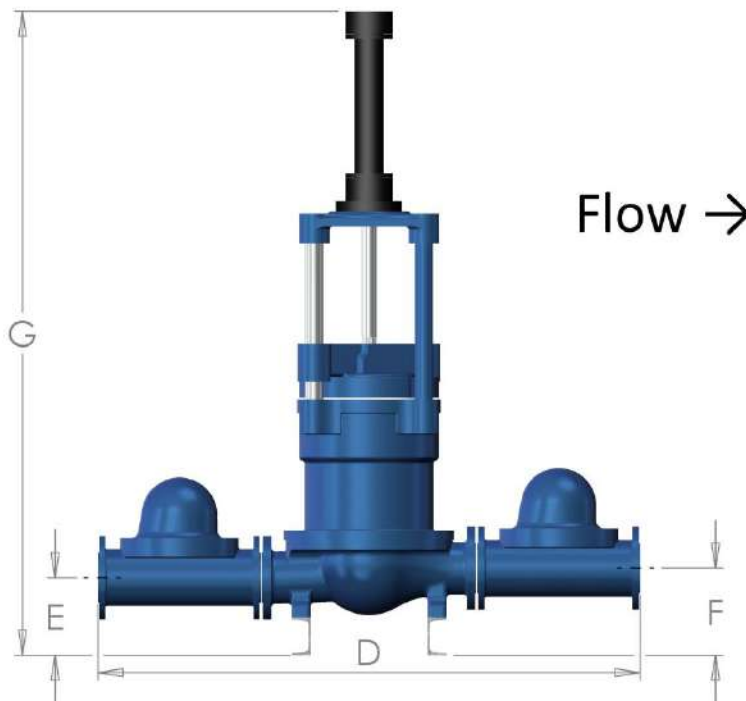
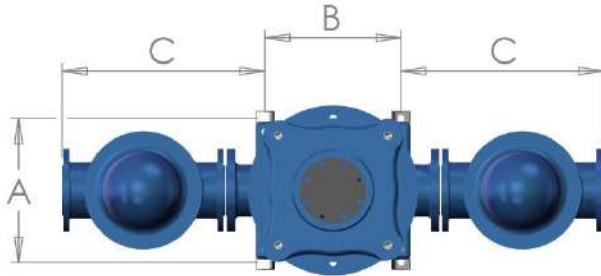


# Mallet Hydraulic Ram GA

Pump Type\Dimension	A	B	C	D	E	F	G	H	I
240/270 Dn100	380	360	536	1433	205	230	1760	420	450
240/270 Dn150	380	360	695	1750	205	230	1760	420	450
360/380 Dn150	500	380	688	1756	180	230	2000	380	590
460/480 Dn150	600	500	685	1870	200	250	2100	500	720

All dimensions are approximate and are for guidance only. Please contact Energy if you need specific dimensions.

Approximate weight:  
 240/270 Dn100: 500kg  
 240/270 Dn150: 600kg  
 360/380 Dn150: 1200kg  
 460/480 Dn150: 1600kg



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# Diaphragm Pump Overview

---

Thanks to their simple design, ease of maintenance and robust construction, coupled with favourable whole life costs, our range of diaphragm pumps have a long established heritage within the Wastewater and Waste process industries.

Our pumps are self-priming and are generally fixed speed although variable speed options are available. Flows ranging from 0.2l/s up to 14l/s ( $\leq 1\text{m}^3/\text{hr.}$  up to  $50\text{m}^3/\text{hr.}$ ) across the three sizes of diaphragm pump and a maximum working pressure of 2.5 Bar makes them suitable for use across a wide range of applications.

Incorporated into each pump are specially designed non-return valves, one on the suction side and one on the delivery side, that are renowned for reliability and for being very difficult to block. At Energy these are referred to as Bullfrog valves. The Maxi diaphragm pump has its own Maxi Bullfrog valve capable of handling solid particles up to 20mm diameter and is commonly used on pipework diameters of 50mm. Both the Major diaphragm pump and Mastiff diaphragm pump use the same Mallard Bullfrog valve which is capable of handling solid particles up to 60mm diameter and is designed to be used on pipework diameters of between 80mm-150mm typically. The Maxi diaphragm pump is available with 50mm PN16 flange and 50mm hose tail connections. The Major and Mastiff diaphragm pumps are available with 80mm and 100mm PN16 flange connections.

Due to the flow characteristics of this pump type we recommend that surge arrestors are fitted to most installations. Surge arrestors reduce water hammer, smooth flow and improve the pumps performance leading to a more efficient installation.

Other ancillary items available with the pumps include anti-condensation heaters, thermistors, over pressure protection, diaphragm failure detection, frost protection covers and other items. Also we can offer single phase motor and diesel drive options across the range. All of the above pump configurations are also available as packaged and/or mobile trailer mounted systems.

We are happy to offer any help or advice you may require with regards correct installation of our range of pumps including visits to site etc. As well as this we also offer a bespoke design service using the latest 3d modelling software.

## Ram Pump Overview

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Like the diaphragm pumps our range of ram pumps have a simple design, are easy to maintain and are of robust construction, leading to favourable whole life costs. They also have a long established heritage within the Wastewater and Waste process industries.

Our pumps are self-priming and are generally fixed speed although variable speed options are available in both mechanically driven and hydraulically driven variants. With flow rates up to 30l/s ( $\geq 100\text{m}^3/\text{hr.}$ ) and a maximum working pressure of 20 Bar, these pumps are an alternative to the diaphragm Pumps for meeting these requirements.

As with the diaphragm pumps, incorporated into each Ram pump are specially designed non-return valves, one on the suction side and one on the delivery side, that are renowned for reliability and for being very difficult to block. The smaller mechanical ram pumps use the same Mallard Bullfrog valve as the diaphragm pumps for pressures of up to 4 Bar. Above these pressures the pumps are fitted with 'Camel' Ball valves with either 100mm or 150mm PN16 flange connections.

Due to the flow characteristics of this pump type we recommend that surge arrestors are fitted to most installations. Surge arrestors reduce water hammer, smooth flow and improve the pumps performance leading to a more efficient installation.

Other ancillary items available with the pumps include anti-condensation heaters, thermistors, over pressure protection and other items. Hydraulic variants are supplied with bespoke power packs and can also be supplied with PLC programmes for pump operation.

We are happy to offer any help or advice you may require with regards correct installation of our range of pumps including visits to site etc. As well as this we also offer a bespoke design service using the latest 3d modelling software.

## Technical Data

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Within this section we provide information on pumps in general, and some more detail on specific areas of our pumps. There are also some tools included to help determine a pump which would be best suit a duty, i.e. flow & pressure calculator and pump selector links below.

### [About Pumps](#)

- All about pumps in general and more detail on the type of pumps which we manufacture, the benefits of them and the type of tasks which they are used for.

### [Positive Displacement Pumps](#)

- What these types of pumps are, compared to other types, and why our pumps are positive displacement pumps.

### [Surge Arrestors](#)

- About Surge Arrestors and why they are used on our pumps, and the benefits of using them with a pump.

### [Flow & Pressure Calculator](#)

- Use this tool to get an idea of what flow and pressure your pumps may need, by entering certain requirements based on your specific needs.

### [Pump Selector](#)

- If you know the flow & pressure rates already or have got them from the Flow & Pressure Calculator you can enter them here to see which pump best fits the criteria.

If you are reading a paper version of this document, please scan the QR code below or visit our website:

[www.energypumps.co.uk](http://www.energypumps.co.uk)

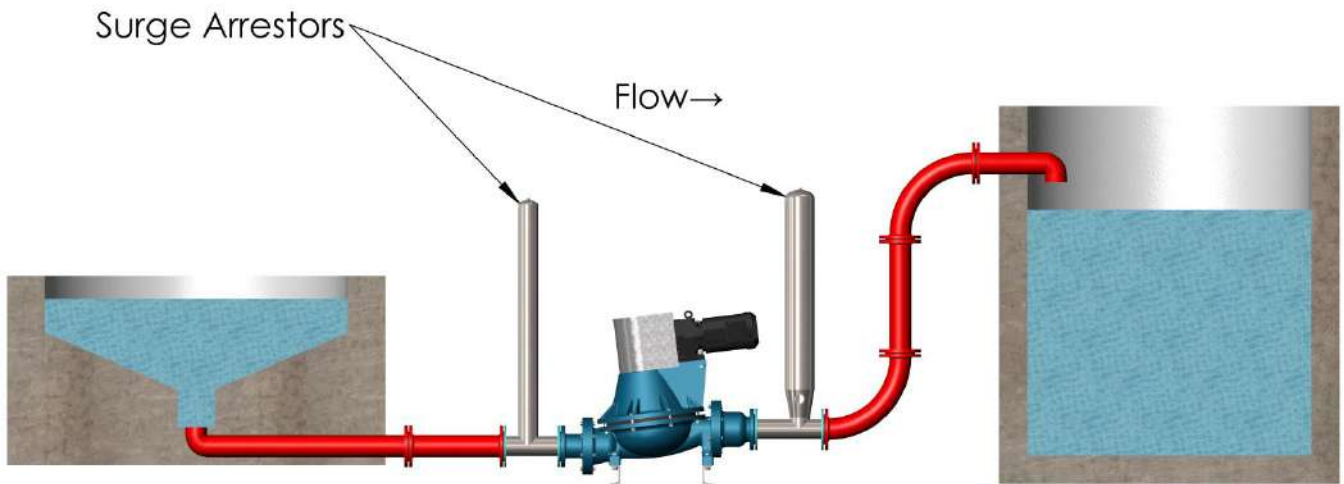
for these resources.



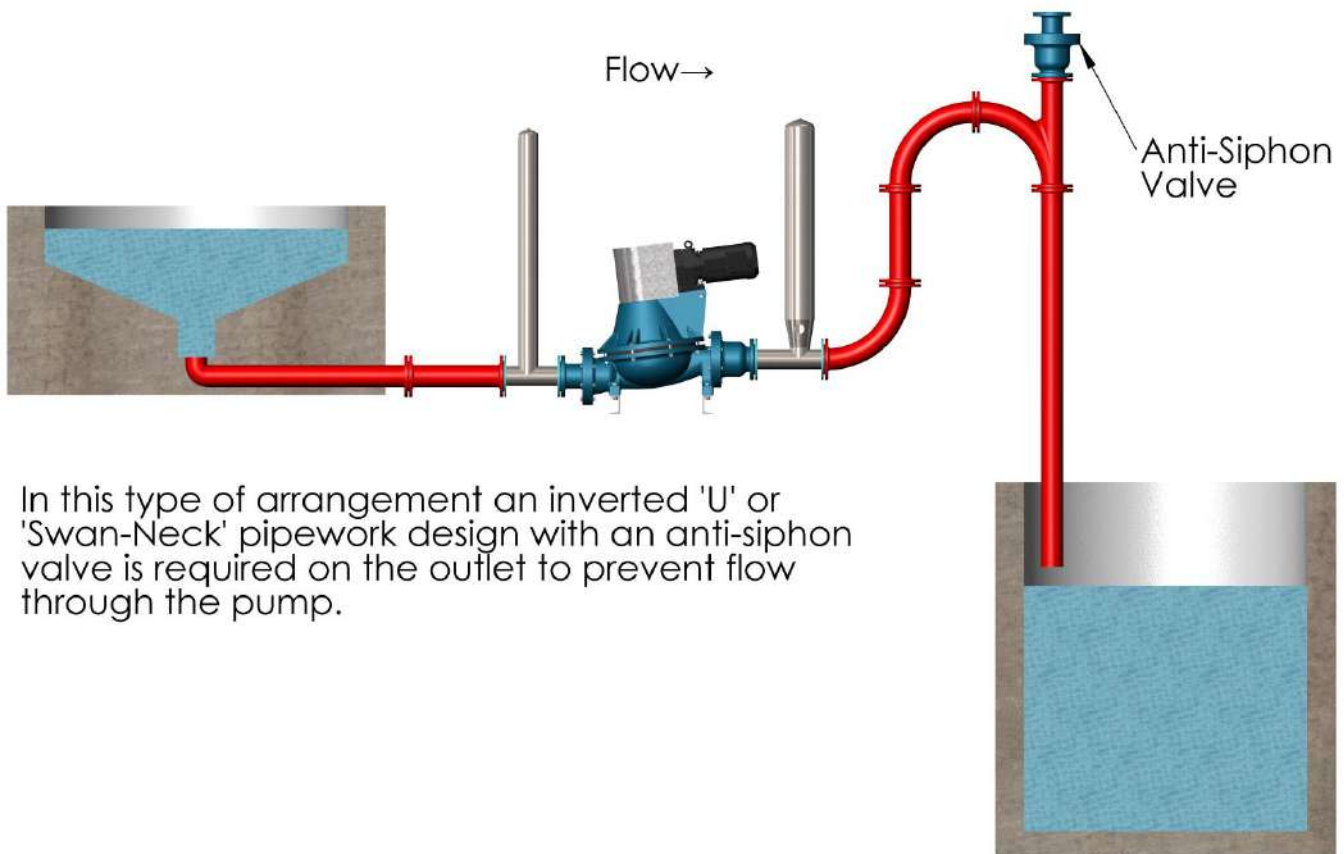
## Applications for Energy Pumps

<p><b>Municipal Waste Water</b>          Desludging/sludge transfer of primary, humus and final sedimentation tanks, thickened sludges, RAS and SAS sludges, grit and rag laden sludges, scum waste, digested sludges, thickened filter press sludges, sludges from liquor treatment plants, screen washwater pumps, anaerobic digesters.</p>	<p><b>Mining Industry</b>          Potash, phosphate, lime, copper, gold, lead, silver, coal wash wastes, filter press feed, sedimentation tank sludge removal.</p>
<p><b>Food Processing Industry Wastes</b>          Any prepared food wastes on waste water treatment plants, anaerobic digesters.</p>	<p><b>Meat and Fish Processing Wastes</b>          Poultry processing wastes, abattoir processing wastes, fish processing wastes, anaerobic digesters.</p>
<p><b>Foundries</b>          Sand clay, rice hulls and coal dust transfer.</p>	<p><b>Glass Plants</b>          Sand transfer, ceramic slurry transfer, glass fines waste transfer.</p>
<p><b>Paper Mills</b>          Green liquor dregs, return/reclaim paper stock, waste sumps, kaolin transfer, clay/carbon/paper wastes, wood fibres/chips from debarking process, anaerobic digesters.</p>	<p><b>Pharmaceuticals Manufacturing</b>          Waste sludges from processes with heavy metals or latex materials, chemical waste transfer.</p>
<p><b>Plating Plants</b>          Chemical transfer, chemical wastes, heavy metals waste transfer.</p>	<p><b>Potable Water</b>          Alum, sludge, lime and filter backwash (charcoal fines).</p>
<p><b>Power Plants</b>          Fly ash/water transfer, river water, filter press feed, lime slurries (coal and nuclear plants)</p>	<p><b>Refineries</b>          A.P.I. separator sludge, tank bottom sludge, waste fuels.</p>
<p><b>Railroad</b>          Engine and rail car wash down, grit, grease, mud, oils diesel fuel and toilet waste removal/transfer.</p>	<p><b>Sand and Gravel Plants</b>          Wash down waste sumps, mild acetic liquid in cleaning of sand for special glass, sand slurry transfer.</p>
<p><b>Soap Manufacturing</b>          Soap wastes, waste sumps.</p>	<p><b>Steel Mills and Iron Works</b>          Clarifier sludge removal, sludge transfer, iron oxide, coke wastes, boiler room fly ash, lime slurry, acetic wash water sumps.</p>
<p><b>Tanneries</b>          Acidic wastes with hide, hair and bone particles.</p>	<p><b>Textile Mills</b>          Waste dye water with fibres and man-made fibres transfer.</p>
<p><b>Farming</b>          Slurry transfer, anaerobic digesters.</p>	<p><b>Distilleries/Breweries/Wineries</b>          Various vegetable, fruit and spent grain wastes, anaerobic digesters.</p>

# Pipework Arrangement Guide



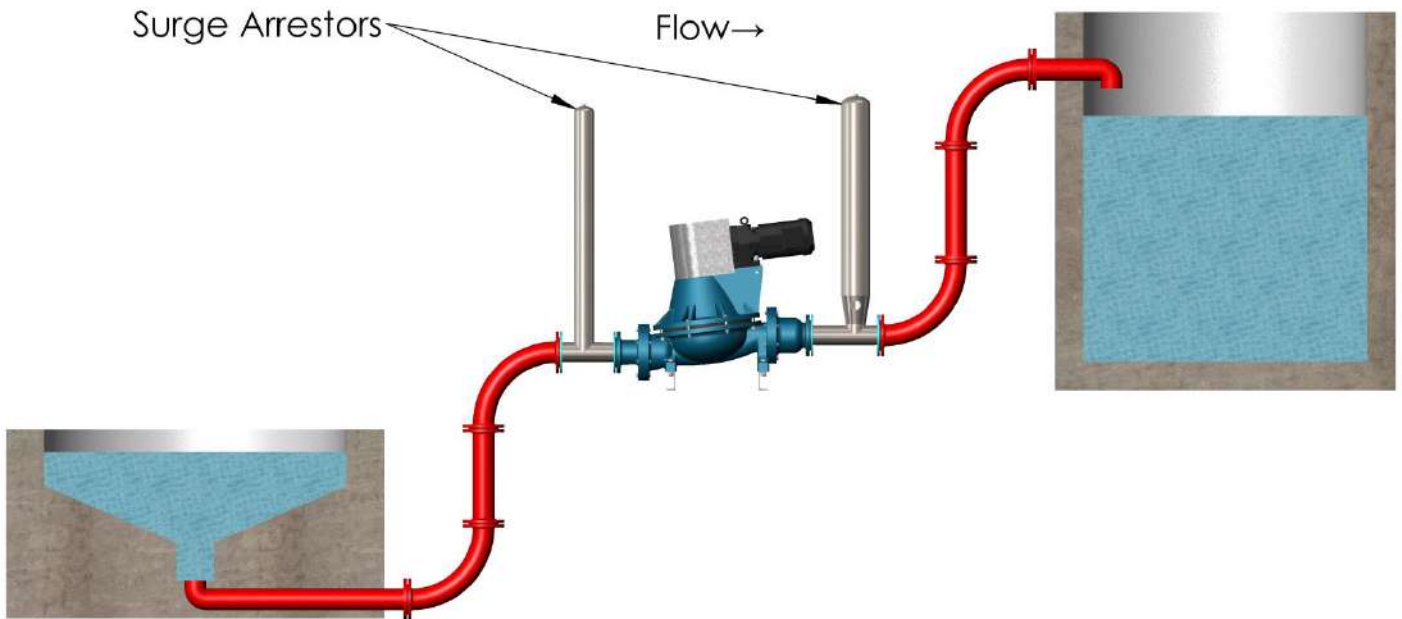
Flooded Suction - Positive Head



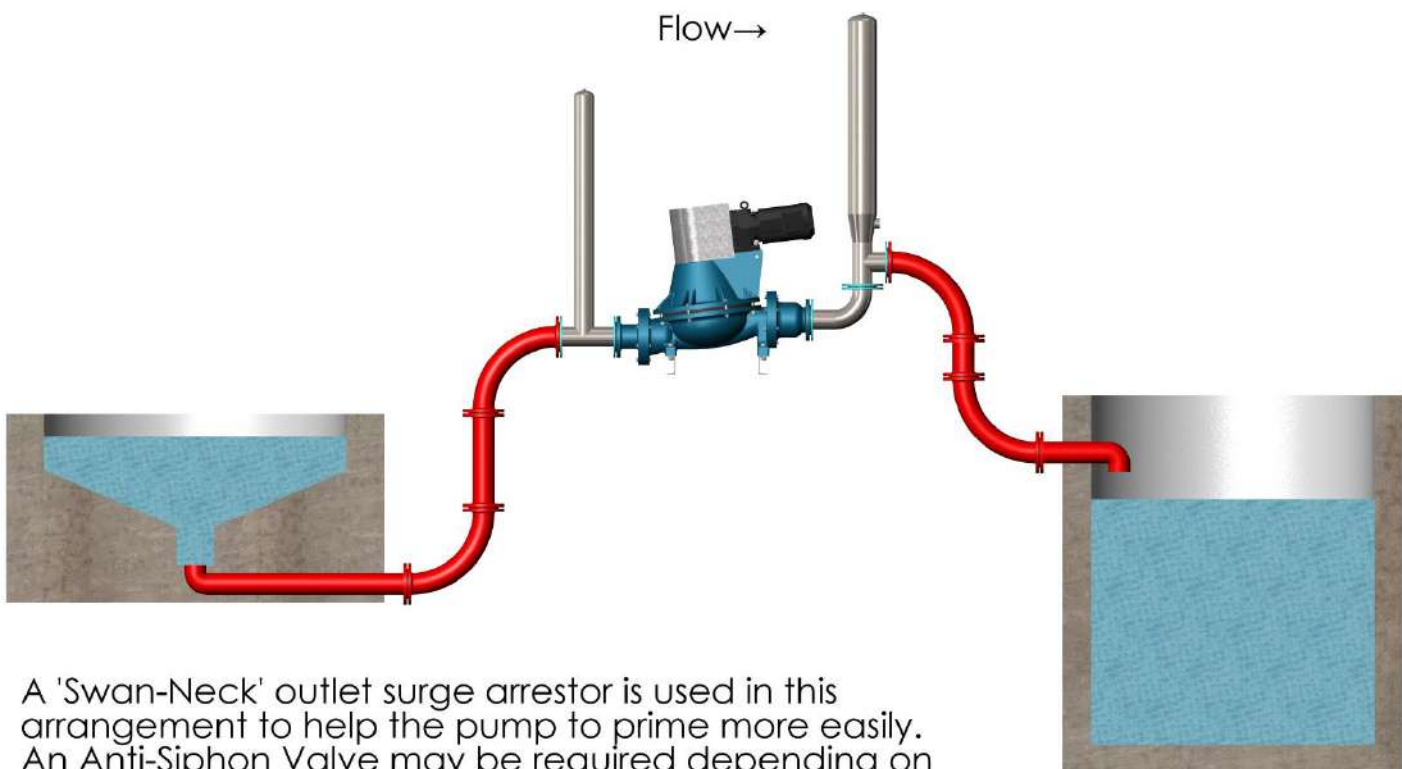
In this type of arrangement an inverted 'U' or 'Swan-Neck' pipework design with an anti-siphon valve is required on the outlet to prevent flow through the pump.

Flooded Suction - Negative Head

# Pipework Arrangement Guide



Suction Lift - Positive Head



A 'Swan-Neck' outlet surge arrestor is used in this arrangement to help the pump to prime more easily. An Anti-Siphon Valve may be required depending on outlet conditions.

Suction Lift - Negative Head