



# QUARRY HANDBOOK



**Franklin Electric**



# ABOUT PIONEER PUMP SOLUTIONS

**With over 10 years in the hire industry, Pioneer Pump Solutions has grown rapidly to become one of the country's leading pump companies with an extensive range of diesel and electric driven pump sets and ancillaries for hire.**

Operating from our extensive network of depots across the UK, Pioneer Pump Solutions are chosen for our high efficiency pumps, robust construction, and excellent customer service.

With the largest range of solid handling and clear liquid engine driven pump sets, we are the UK's leading supplier of high performance, low cost pumps.

Operating throughout the UK and Europe, we are recognised as the leading solution provider for temporary and fixed installation pumping applications, both for hire and purchase.



## OUR PARENT COMPANY



Franklin Electric is a global provider of complete systems for the movement of water. Manufacturing pumps, motors, controls, and drives, Franklin Electric offers innovative solutions for a multitude of applications in the municipal, industrial, mining and commercial markets. We are your single source for engineering, manufacturing, packaging, service and technical support. Maximize performance beyond the pump and choose Franklin as your partner for water systems.

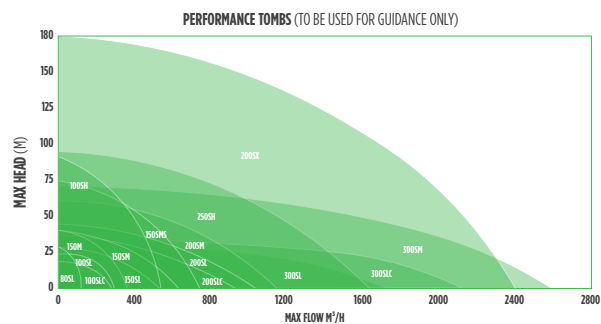


# OUR FLEET

**The Pioneer Pump Solutions fleet contains a range of diesel and electric pumps for a range of applications. There are five main types of pumps in our fleet that can be used together in a configuration that will suit your specific needs.**

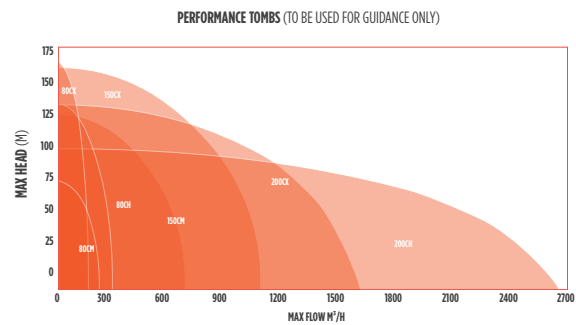
## SOLIDS HANDLING

Pioneer standard solids handling pumpsets operate flows up to 2,500m<sup>3</sup>/hr and pressures in excess of 170m, whilst still being able to pass solids of 150mm. All Pioneer's solids handling pumps utilise an enclosed solids handling impeller offering outstanding NPSHr and suction lift characteristics whilst delivering high efficiency, therefore low fuel burn performance.



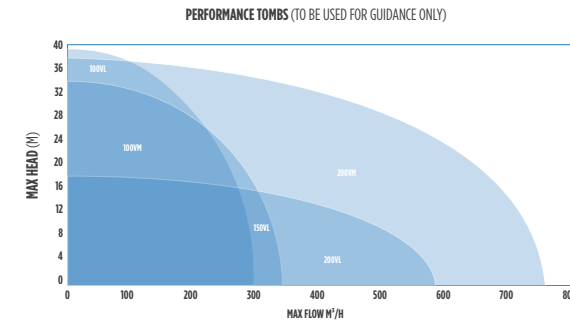
## CLEAR LIQUIDS

All of the clear liquid pumps offer outstanding NPSHr and suction lift characteristics. These designs are able to operate at up to 84% or more efficiency therefore offering low fuel burn performance, reducing running costs and downtime. Our standard pumps operate at flows in excess of 1,200m<sup>3</sup>/h and pressures over 150m whilst still being able to handle small solids.



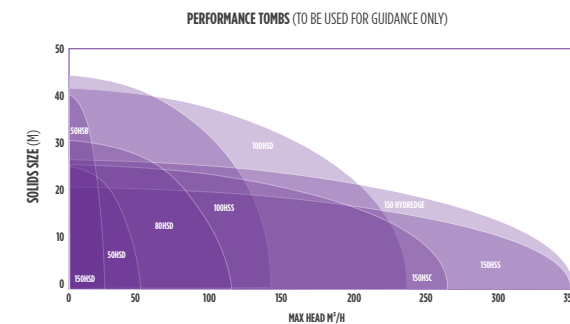
## VORTEX

Pioneer Prime vortex pumps are specifically designed for sewage and wastewater applications which contain large amounts of stringy solids and rag. Capable of flows in excess of 700m<sup>3</sup>/h and heads higher than 32m whilst still being able to pass solids up to 130mm. Pioneer Vortex range offers the users the benefits of reduced downtime and low energy consumption, in both fixed and temporary applications.



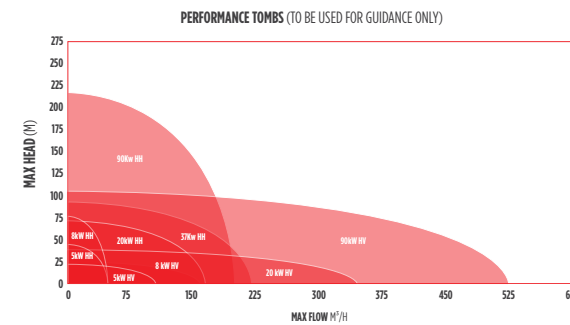
## HYDRAULIC SUBMERSIBLE

Pioneer Pump has designed a new 21st century hydraulic submersible pumpset package incorporating the very latest design of hydraulic powerpack, enabling the unit to drive up to six different hydraulic pump ends both in sewage and dewatering applications when the suction lift is greater than 8.5m.



## ELECTRIC SUBMERSIBLE

Minetuff, Pioneer Pumps' own brand of electric submersible pumps, have been added to our range. These pumps have been specifically developed to operate in the challenging mining and quarrying sector. The range incorporates heavy duty materials coupled with highly efficient pumping dynamics to deliver reliability and performance even in the toughest environments. Our Minetuff pumps are supplied in a range of 5kW to 90kW in high flow or high head configurations.





# TELEMETRY

## REMOTE MONITORING

Where remote access and control is required, our remote “Telemetry” is the perfect solution. You can choose to monitor and control yourself or use our service where our trained technicians monitor your pump’s performance and respond to any issues that arise during the rental period.

### 24/7 AROUND THE GLOBE MONITORING

The Pioneer telemetry system allows customers to remotely control and monitor their diesel pumpset from anywhere in the world. The telemetry system can be fitted on all Pioneer diesel pumpset models and transmits key engine and pump data to the operator via a single dashboard. The webpage allows for maximum access and features; whilst the mobile app allows for quick access to the pumpset whilst on the move. Both platforms allow easy access to all pumpsets, from anywhere in the world, 24/7.

### CUSTOMISABLE REPORTS

In addition to live control and monitoring, the Pioneer telemetry system offers the option of customisable reports that are automatically sent to single or multiple users. This allows operators to easily monitor and track pumpset usage, as well as plan maintenance regimes.



## DEFWIZARD

The DEFwizrd is Pioneer Pump Solutions’ latest addition to our fleet. Developed in house by Pioneer engineers, this new system removes the need for manual top up of the Adblue tank and allows Stage V pumps to run autonomously for longer, without the need for manual intervention.

The DEFwizrd is available as a Pioneer Pump Solutions exclusive and is compatible with all pumps in our fleet. It allows for 50x longer operation when using a standard IBC, and when combined with the Pioneer Telemetry system, can be monitored from afar.

### TELEMETRY KEY FEATURES

- Start/stop control
- Speed control
- Fuel Monitoring
- Running status
- Track all sensor and engine parameters
- Customisable SMS, in-app, and email pumpset status alerts
- Engine loading alerts

### DEFWIZARD FEATURES

- Allows for autonomous top up of the AdBlue tank
- Up to 50x longer operation
- Remote monitoring





# DEWATERING PUMPS

As the quarry digs deeper, it becomes necessary to pump out water. The required flow rate will be impacted by many factors, such as:

- The level of the water table in relation to the level of the dig. The geology of the land can have an impact on this, such as high clay content meaning an absence of ground water, or sand and gravel leading to high volumes flowing into the dig.
- The area of the dig. Generally quarries excavate minerals in “Cells”. These are smaller parcels of land, which help manage water inflow, and processing.

Below are some recommendations for dewatering pumps from our fleet, but other options are available. For a bespoke site survey with one of our knowledgeable sales team, please contact us.

## DIESEL SURFACE



### 100SL 100SM

PUMP SIZE  
MAX FLOW  
MAX HEAD  
OPERATING SPEED RANGE

4 x 4” (100mm x 100mm)  
295m<sup>3</sup>/h  
23m  
1400 – 1800rpm

4 x 4” (100mm x 100mm)  
359m<sup>3</sup>/h  
39m  
1400 – 2000rpm



### 150SL 150SM

PUMP SIZE  
MAX FLOW  
MAX HEAD  
SOLIDS SIZE

6 x 6” (150 x 150 mm)  
520 m<sup>3</sup>/h  
27 m  
3” (76 mm)

6 x 6” (150 x 150 mm)  
620 m<sup>3</sup>/h  
39 m  
3” (76 mm)



### 200SL

PUMP SIZE  
MAX FLOW  
MAX HEAD  
OPERATING SPEED RANGE

8 x 8” (200mm x 200mm)  
1010m<sup>3</sup>/h  
44m  
1400 – 2000rpm

# SILT REMOVAL

Silt lagoons allow washed out material from wash plants to settle out over time. The lagoons are large, and over time they fill. Once a lagoon reaches capacity, you can either dig another lagoon, which requires costly materials, or remove the silt material from the lagoon.

Removal of silt can be done with heavy machinery, or it can be done easily and most cost effectively with a submersible pump.

## DIESEL SUBMERSIBLE



### 150 HYDREDGE & HYPP30

PUMP SIZE  
MAX FLOW  
MAX HEAD  
SOLIDS SIZE

150mm  
350m<sup>3</sup>/h  
27.5m  
90mm



### 100HSS & HYPP30

PUMP SIZE  
MAX FLOW  
MAX HEAD  
SOLIDS SIZE

100mm  
140m<sup>3</sup>/h  
45m  
70mm



### 150HSS & HYPP30

PUMP SIZE  
MAX FLOW  
MAX HEAD  
SOLIDS SIZE

150mm  
350m<sup>3</sup>/h  
27m  
90mm



### 100SL - FOR JETTING RING OR INLINE BOOSTER PUMP

PUMP SIZE  
MAX FLOW  
MAX HEAD  
OPERATING SPEED RANGE

4 x 4” (100mm x 100mm)  
295m<sup>3</sup>/h  
23m  
1400 – 1800rpm

# WASH PLANT FEED

As a quarry excavates material, they need to wash the product of contaminants such as silt. This is done using a wash plant, which cleans and separates the material by size.

These wash plants require an inflow of clean water, which powers the spray bars and centrifuges. Whilst electric pumps are preferable for this kind of application, Pioneer Pump Solutions are experienced in supplying solutions for wash pump feeds, and have a range of electric, diesel, and submersible pumps available. A typical duty for this would be 350m<sup>3</sup>/hr at 30-40m head, and our knowledgeable team can assist you with finding the right pump combination for your site.

## ELECTRIC SURFACE



### 200SME

PUMP SIZE  
MAX FLOW  
MAX HEAD  
OPERATING SPEED RANGE

8 × 8" (200mm × 200mm)  
1120m<sup>3</sup>/h  
60m  
1400-2000rpm



### 150CH

PUMP SIZE  
MAX FLOW  
MAX HEAD  
SOLIDS SIZE

8 x 6" (200 x 150 mm)  
800 m<sup>3</sup>/h  
110 m  
1.5" (38 mm)

## ELECTRIC SUBMERSIBLE



### 90KW HV

MAX FLOW  
MAX HEAD  
SOLIDS SIZE

522 m<sup>3</sup>/h  
103 m  
10mm

## DIESEL SURFACE



### 150SMS

PUMP SIZE  
MAX FLOW  
MAX HEAD  
OPERATING SPEED RANGE

6 × 6" (150mm × 150mm)  
740m<sup>3</sup>/h  
74m  
150-180rpm



### 200SL

PUMP SIZE  
MAX FLOW  
MAX HEAD  
OPERATING SPEED RANGE

8 × 8" (200mm × 200mm)  
1010m<sup>3</sup>/h  
44m  
1400-2000rpm



### 100SH

PUMP SIZE  
MAX FLOW  
MAX HEAD  
OPERATING SPEED RANGE

6 × 4" (150mm × 100mm)  
535m<sup>3</sup>/h  
92m  
1400 – 1700rpm



### 250SH

PUMP SIZE  
MAX FLOW  
MAX HEAD  
OPERATING SPEED RANGE

10 × 8" (250mm × 200mm)  
1620m<sup>3</sup>/h  
95m  
1400-1800rpm



### 200SM

PUMP SIZE  
MAX FLOW  
MAX HEAD  
OPERATING SPEED RANGE

8 × 8" (200mm × 200mm)  
1120m<sup>3</sup>/h  
60m  
1400 – 2000rpm

# LAGOON BALANCING

When water from the yard, silty water, or water from the dig site is pumped away, it will usually go into a silt lagoon. There are many designs for silt lagoons, but generally the dirty water enters at one side, and the clean water is pumped away from the other.

The quarry will also have a fresh water lagoon where fresh water is deposited, to eventually feed the wash plant. Transferring water from the silt lagoon to the fresh water lagoon can be done via a gravity fed system, but usually it will be done with pumps. The flow of the fresh water into this lagoon needs to match or exceed the flow into the wash plant to ensure the plant doesn't need to stop.

Typical duty for this would be 350m3/hr, but a low head as the lagoons are usually level.

Lagoon balancing can be achieved with a range of different pumps, available from Pioneer Pump Solutions as electric, diesel, and submersible options. Our team can conduct a bespoke site survey, which will fully take in to account the needs of your site, and will help you find the best configuration for you.

## DIESEL SURFACE



### 200SL

PUMP SIZE 8 × 8" (200mm × 200mm)  
MAX FLOW 1010m3/h  
MAX HEAD 44m  
OPERATING SPEED RANGE 1400 – 2000rpm



### 150SM

PUMP SIZE 6 × 6" (150mm × 150mm)  
MAX FLOW 620m3/h  
MAX HEAD 39m  
OPERATING SPEED RANGE 1400 – 2000rpm

## ELECTRIC SURFACE



### 200SME

PUMP SIZE 8 × 8" (200mm × 200mm)  
MAX FLOW 1080m3/h  
MAX HEAD 58m  
OPERATING SPEED RANGE 2000rpm



### 100SL

PUMP SIZE 4 × 4" (100mm × 100mm)  
MAX FLOW 295m3/h  
MAX HEAD 23m  
OPERATING SPEED RANGE 1400 – 1800rpm

## ELECTRIC SUBMERSIBLE



### 20KW HV

PUMP SIZE 6" (150mm)  
MAX FLOW 342m3/h  
MAX HEAD 37m  
OPERATING SPEED RANGE 1500 – 3000rpm



### 37KW HV

PUMP SIZE 4" (100mm)  
MAX FLOW 216m3/h  
MAX HEAD 91m  
OPERATING SPEED RANGE 1500 – 3000rpm

# STOCKPILE DEWATERING

The yards and areas around the wash plant need to be kept free of water to keep the ground stable, and prevent the product from becoming too wet. Some quarries will use a sump and pump out of this, however the most effective method is to install a ground dewatering system.

This involves installing a network of perforated pipes under the ground, and a pump solution will continuously direct water away from it. A piston pump would be preferred for this application, but our knowledgable team can conduct a site survey to find the most effective configuration for you.

## DIESEL SURFACE



**100SL**  
PUMP SIZE  
MAX FLOW  
MAX HEAD  
OPERATING SPEED RANGE

4 × 4” (100mm × 100mm)  
295m3/h  
23m  
1400 – 1800rpm

## ELECTRIC SURFACE



**6” PISTON PUMP**  
Available in both electric and diesel pumpsets and multiple configurations and sizes.



**100SL-E**  
PUMP SIZE  
MAX FLOW  
MAX HEAD  
SOLIDS SIZE

4” x 4” (100 mm x 100 mm)  
330 m3/h  
23 meters  
3” (76 mm)

# PUMP ACCESSORIES



**ROAD RAMPS**  
Enables Pioneer to bypass without closing roads. Using the largest available, we ensure the maximum flow through the ramps with minimum losses to ensure reduced fuel burn when they are used.



**SETTLEMENT TANKS**  
Capable of a variety of flow rates, our settlement tanks are designed to minimise the pollution of liquids discharged from a site. Available to hire or buy and located in all of our hubs.



**FUEL TANKS**  
Pioneer have a number of bulk storage fuel tanks for use with their pumpsets up to 4000 litres offering the opportunity to have extended run time on the entire range of pumpsets.



**DEFWIZARD**  
Allows extended operation without the need for manual intervention to top up the internal Ad-Blue tank. The module connects to the pump external canopy, and is controlled by the pump controller.



**HOSES**  
In sizes up to 450mm diameter in layflat, poly, and wire armoured configuration. Available with bauer couplings or flanged.



**FITTINGS**  
Our fittings and accessories allow us to install our pumps into a variety of applications. We hold bends, strainers, reducers, increasers and all the fittings needed for installation.



**FLOWMETERS**  
We offer a range of digital and analogue flow meters which allows instantaneous flow rates to be monitored. The flowmeters can be supplied with flange or quick release couplings.



**TELEMETRY**  
Allows customers to remotely control and monitor their diesel pumpset. Compatible with all Pioneer diesel pumpset models and transmits key engine and pump data to the operator via a single dashboard.



**CONTACT US 24/7:**  
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