

SECTION 6  
**DIESEL ENGINE DRIVEN  
SELF-PRIMING PUMPS**



At the heart of our diesel engine driven pumps is the Hidrostal end suction pump which because of its solids handling capabilities, viscous handling properties and high hydraulic efficiencies makes it the perfect choice for diesel engine driven pumps. The pump is not only capable of pumping dirty water, but many other types of liquor [including raw sewage and bentonite] that a typical 'contractors' pump could not handle.

In addition to the benefits of the Hidrostal pump, the driving design principle behind our diesel pumpset is to offer the user the most efficient cost effective method of transferring liquor whilst creating the minimum environmental disturbance in terms of noise, fuel usage, emissions and risk of pollution



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Betsy on trailer



Working in noise sensitive area



Betsy at work for the Environment Agency

**Environmental credentials**

- The pump has a double skinned and insulated acoustic enclosure to minimise noise and enable it to be used in city areas without causing a noise nuisance to people living or working in the vicinity. Noise Levels in some cases less than 60Db[A] @ 7m
- The pump has a double skinned bund to prevent any possible contamination to the area where it is positioned. It also has a built in oil separator.
- The pump has automatic start/stop level controls that are supplied as standard. These help to minimise fuel usage.
- The pumps have class beating fuel consumption figures. Our 4" pump operates with a fuel consumption of approx 2.4 litres/hr – 5 litres/hr, this can allow for in excess of 100 hours of continuous operation before refuelling is required.
- The pump has a vacuum priming device designed to automatically disengage and stop when the main transfer pump is primed. The energy and fuel required for priming are therefore kept to the absolute minimum.

- Each pumpset has a highly efficient Hidrostal pump fitted so that the smallest sized diesel engine can be used to save energy and fuel.
- The pump has excellent solids handling capabilities and an impeller geometry that enables the pump to pump large solids, rags & fibrous material (textiles), as well as viscous liquids such as slurries, sludges and muds without clogging.
- The Betsy is designed with the modern design ethos of least whole life cost in tune with the requirements of the Water Utilities Companies and other major pump users such as the Environment Agency.
- The improved efficiency of the Betsy reduces the routine operating costs. The design of the pump minimises the unscheduled maintenance costs associated with pump blockages. As well as the reduction in operating and maintenance costs there are, therefore, the operational benefits that result from greater reliability and usability.

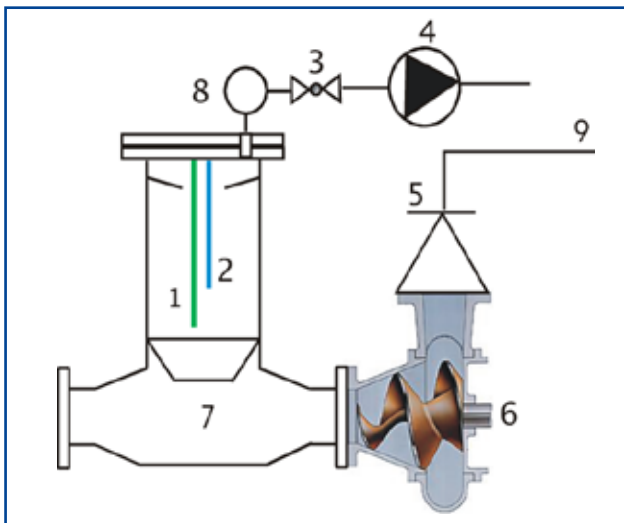
### Pump

The Hidrostal pump is selected from our dry well end suction pump range which has the screw centrifugal impeller fitted enabling the pumps to handle liquors that are solids laden or viscous in nature.

All the pumps in the 'Betsy' range have as standard a feature that allows the impeller and liner clearance to be modified by utilising a simple jacking screw arrangement on the external of the pump to enable quick and easy adjustment on site without the need to disassemble any of the pump parts. This feature is designed to reduce LCC by ensuring that the user can easily maintain optimum pump efficiency

### Priming system

The pump has a vacuum priming device designed to automatically disengage and stop when the main transfer pump is primed. The energy and fuel required for priming are therefore kept to the absolute minimum.



### Parts list

1. Sensor (level at which the vacuum pump clutch is engaged and the solenoid valve is opened).
2. Sensor (level at which the vacuum pump clutch is disengaged and the solenoid valve is closed).
3. Solenoid valve.
4. Vacuum pump with V-belt drive and electro magnetic clutch.
5. Reflux valve discharge side Hidrostal pump.
6. Hidrostal pump.
7. Suction pipe with pump priming chamber.
8. Vacuum pump air filter
9. Discharge Hidrostal pump.

### Description of the priming cycles

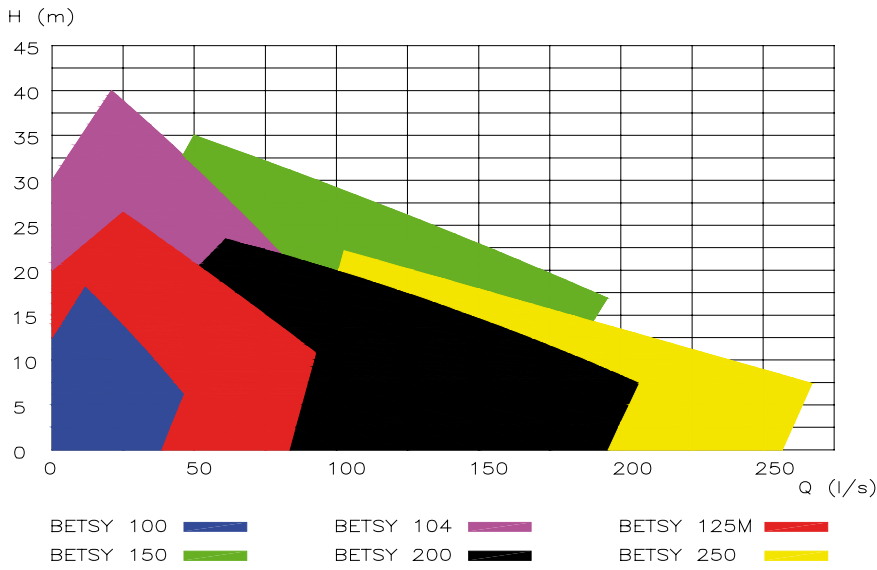
Normal and fail-safe cycles are combined

1. Pump is empty.
2. Diesel engine is started.
3. Vacuum pump magnetic clutch is engaged and the solenoid valve is opened
4. Water level rises to sensor (2) magnetic clutch is disengaged and the solenoid valve is closed.
5. Water level falls under sensor (1) solenoid valve is opened and magnetic clutch is engaged.
6. The cycle is repeated.

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**Standard 'Betsy' Range Chart**



**Please note that these curves represent only a small part of the pump range that Hidrostat manufacture. If your duty condition is outside of this standard range, please consult our sales office who can offer bespoke diesel pumpsets to suit the required application.**