Viridian Systems

Clearer Thinking

VP Pneumatic Pumps

FTS

FieldTech Solutions

NEW – TWO INCH PUMP OPTIONS!

Pumping Excellence

Viridian Systems have been building the VP range of pneumatic borehole pumps at our facilities in the Northwest England since 2001.

About Viridian

Viridian Systems has been providing unrivalled knowledge and expertise to the landfill sector designing and installing leachate management systems. From our base in Northwest England, we supply our pumps to all international markets and have distributors and partners in the USA, Mexico, Canada, Brazil, Colombia, Australia, France and Germany.

The VP Pump Range

The VP series are float actuated, fully automatic, self-regulating pneumatic borehole pumps that require no external form of control.

The VP range of pumps are all designed specifically for pumping landfill leachate, landfill gas condensate and contaminated groundwater. As no down-well level control device is required, the VP pumps lend themselves to being part of a multi-well pumping system.

This makes overall system control very simple. With minimal training, the client's site personnel quickly become confident with both pump and system.

As the VP pumps are driven by compressed air, a multi-well system would have an air-main connecting each pump - a far safer power source than electricity cables and less costly!

The VP series have been designed to ensure there is a model to suit your pumping needs - for example high temperature applications and chemical resistance.

The VP range is available in a range of sizes and variations.

The VP4 range is capable of discharging 1.1 litres of liquid per cycle. It is available as a top loading version as well as short version, the LDD (when minimum liquid head is vital).

The VP3 range has a reduced discharge capacity but it is ideal for smaller borehole sizes. It is also available in top loading and shorter length (LDD).

Unrivalled engineering.

The materials of construction have been selected for the harsh environment in which they are working, such as aggressive media, high-temperature and suspended solids. For these reasons materials of construction include:

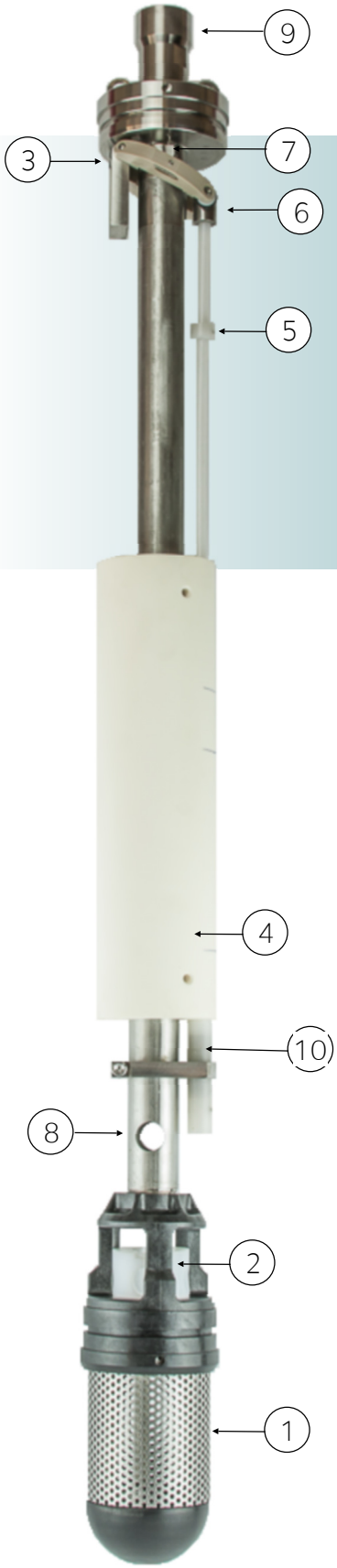
- 316L Stainless Steel
- 17/4 Stainless Steel
- PEEK
- PTFE (Teflon®)
- UHMW PE
- FPM (Viton®)
- PVDF (Kynar®)
- Syntactic
- GRP

The VP Pump Series

Model & Type	VP4-BL	VP4-TL	VP4-BL LDD	VP4 TL LDD	VP3-BL	VP3-TL	VP2-BL	VP2-TL
Liquid Inlet Position	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top
Max Flow Rate litres/hr	>2880	>2100	>1200	>1200	>1200	>1000	>475	>400
Volume/Cycle: Litres	0.9-1.1	0.9-1.1	0.5	0.4	0.6	0.6	0.33	0.3
Pump Length: mm	1,005	1,100	580	740	1,120	1,190	945	995
Weight: Kg	7.5	7.5	5.5	6	5	5.5	1.5	2
Pump Diameter: mm	90	90	90	90	70	70	44	44
Pump Trigger Point: mm	770	620	370	330	715	630	650	595
Min Internal Well dia: mm	100	100	100	100	80	80	50	50
Max Working Depth: m	130	130	130	130	130	130	130	130
Max Operating Temp:°C	100	100	100	100	100	100	100	100
pH Operating Range	1-12	1-12	1-12	1-12	1-12	1-12	1-12	1-12

How it works

The VP series are float actuated, fully automatic, self-regulating pneumatic borehole pumps that require no external form of control.

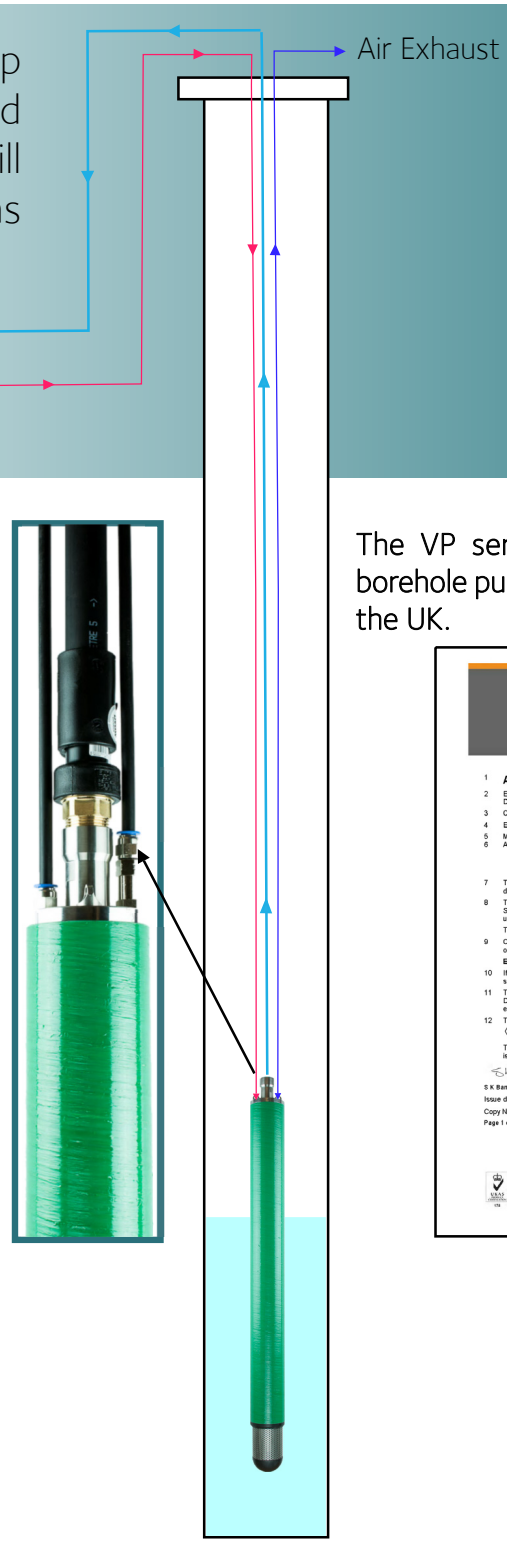


Pump Operation Cycle:

- Liquid enters the pump via the strainer (1) and inlet check valve (2)
- Air trapped within the pump escapes through the air exhaust (3)
- The float (4) rises as the liquid enters and when it gets to the top of its travel
- (5), it trips the rocker mechanism (6)
- The exhaust valve (3) closes
- The air inlet valve (7) opens allowing compressed air into the pump.
- Compressed air closes the bottom check valve (2)
- Liquid within the pump is discharged from the pump through the discharge port
- (8) and up the central discharge tube
- Liquid passes the top check valve (enclosed in head) and passes through riser (9)
- Float descends as liquid is discharged
- Float pulls the rocker mechanism back when the spring (10) is compressed.
- The air inlet closes, air exhaust opens
- Compressed air trapped within the pump can now escape to atmosphere via
- the exhaust valve (3)
- The pump continues to cycle in this way.

Typical Pump Installation

In normal operation the pump is installed in a dedicated leachate well, sump or landfill gas condensate vessel as shown in the illustration.



The VP series are designed for quick and easy installation or removal. The discharge outlet is a 1 inch pipe that is connected via a threaded HDPE transitional electro fusion coupler.

The air inlet and outlet lines (10mm OD) are connected via push fit pneumatic fittings.

As no down-well level control device is required, the VP pumps lend themselves to being part of a multi-well pumping system.

This makes overall system control very simple. With minimal training, the client's site personnel quickly become confident with both pump and system. As the VP pumps are driven by compressed air, a multi-well system would have an air-main connecting each pump - a far safer power source than electricity cables.

The VP series were the first pneumatic borehole pumps to be fully ATEX certified in the UK.

TRL Compliance

ATEX TEST CERTIFICATE

Equipment or protective system intended for use in potentially explosive atmospheres – Directive 94/9/EC – Annex VIII

Certificate No.: TRL08ATEX21145

Equipment: VP4 and VP3 Leachate Pump

Manufacturer: Viridian Systems Ltd
Address: Unit 39
Wirral Business Centre
Birkenhead,
CH41 1JW

This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

TRL Compliance Ltd certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment or protective system intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential report XU1221/6732 and XU1610/8825.

Compliance with the Essential Health and Safety Requirements, with the exception of those listed in section 18 of the schedule to this certificate, has been assured by compliance with:
EN13463-1:2001 & EN13463-5:2003.

If the sign 'X' is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions of safe use specified in the schedule to this certificate.

This certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

The marking of this equipment or protective system shall include the following:
II 2 G c T1 Tamb = -20 °C to + 60 °C

This certificate and its schedules may only be reproduced in its entirety and without change. This certificate is issued in accordance with the TRL ATEX Certification Scheme.

S K Barrowcliff, Director, Safety Division (ATEX)
Issue date: 18 June 2008
Copy No.: 1e
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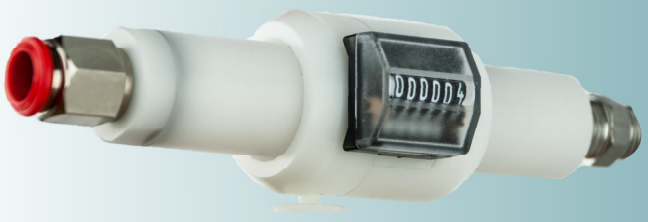
Distribution:
Viridian Systems Ltd and
TRL Compliance Ltd
Form RF308 iss08

TRaC

Pneumatic Pulse Counters

The pulse flow counter comprises a magnetically actuated mechanical counter and a spring return piston housing a magnet. The displacement of the piston is proportional to air flow rate. The external mechanical counter should be positioned relative to the displacement of the piston. As the magnet within the piston sweeps past the mechanical counter, it registers one count. The pulse flow counter should be fed with dry, filtered air down to 20 microns.

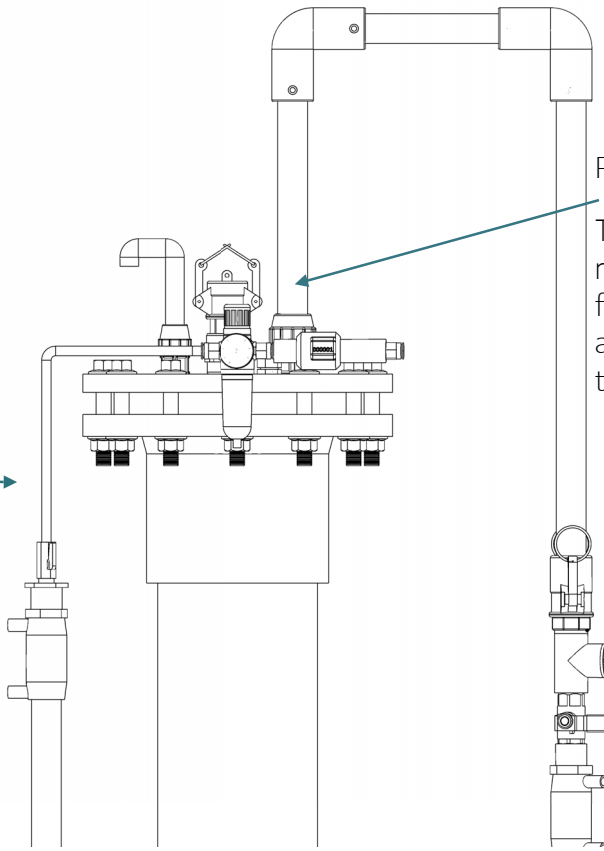


- Connections: 10mm x 1/4" BSPP male push fit
- Main Body Material : Acetyl
- Weight: 133 grams
- Length: 122 mm
- Width: 53 mm
- Magnetic actuating counter

- 6-digit display
- Operating temperature: -26 to +50°C
- Contactless counting
- Protection class IP 66
- Maintenance-free operation – 1 million increments
- Reset: none

Installation Kits

Viridian Systems supply a range of fittings to allow the easy installation of the VP pumps. The installation kit includes all the required fittings for a safe and efficient installation, removal and sampling of the VP pump.



Pressure Regulator and filter -

This is included in the kit to remove any residual particulates from the compressed air supply and to adjust the air pressure to the pump.

Air supply -

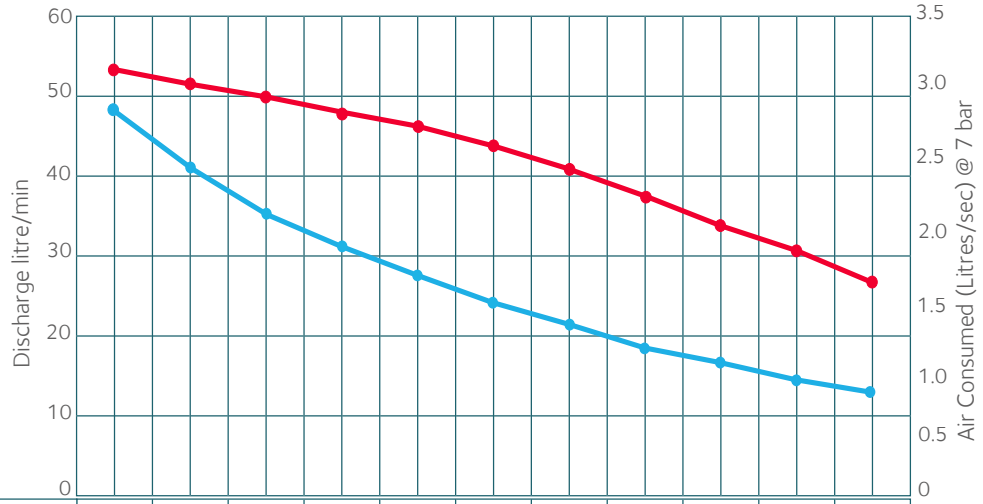
The kit includes the transitional fittings needed to step down from 1inch (HDPE) pipe work to 10mm plastic tubing. It includes a valve to isolate the supply.

Discharge Line -

The kit includes the a 1" inch isolation valve and sample point. It also includes a quick release Camlock for easy separation during maintenance periods.

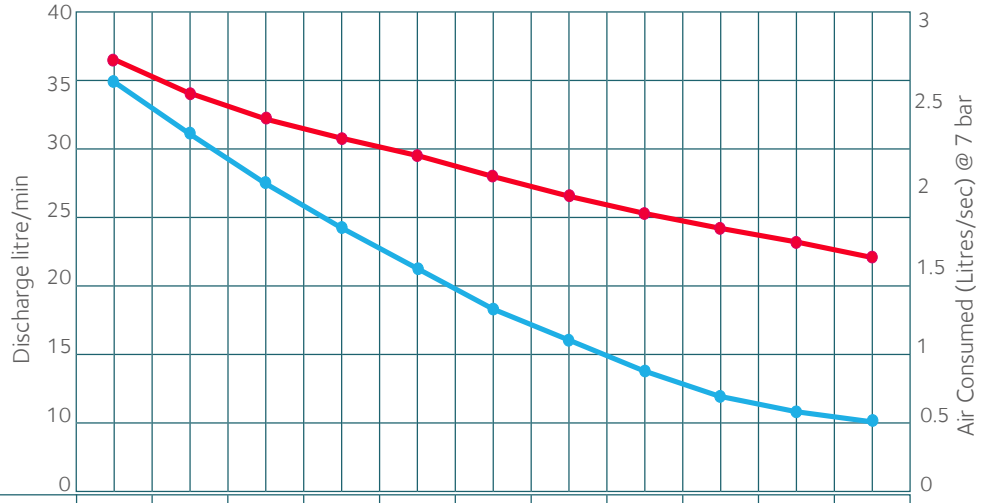
Performance Charts

VP4 BL



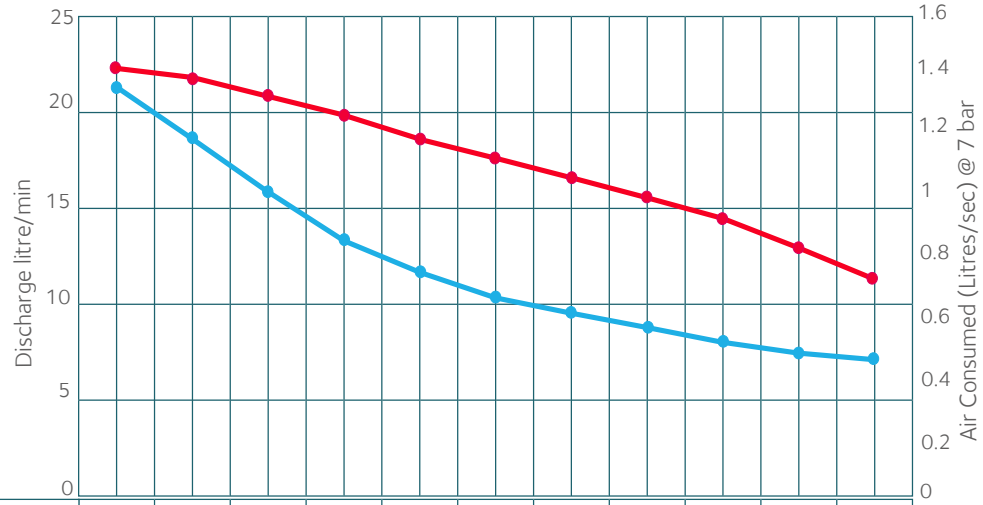
Well Depth (m)	10	15	20	25	30	35	40	45	50	55	60
Discharge LPM	48.0	41.0	36.0	31.5	28.0	24.7	21.5	18.9	16.7	14.8	13.0
Total Air (L/S) Requirement	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.3	2.1	1.9	1.7

VP4 TL



Well Depth (m)	10	15	20	25	30	35	40	45	50	55	60
Discharge LPM	35.0	31.0	27.4	24.0	20.8	17.7	15.5	13.7	12.0	11.0	10.5
Total Air (L/S) Requirement	2.7	2.58	2.46	2.31	2.16	1.98	1.80	1.6	1.4	1.2	1.0

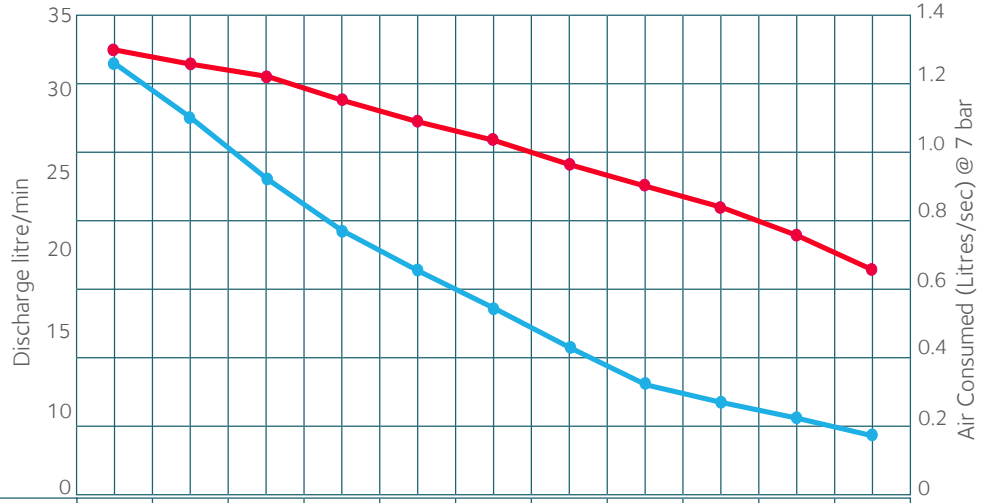
VP4 BL LDD



Well Depth (m)	10	15	20	25	30	35	40	45	50	55	60
Discharge LPM	21.5	18.0	15.7	13.8	12.0	10.6	9.3	8.0	7.0	6.3	6.0
Total Air (L/S) Requirement	1.35	1.32	1.28	1.22	1.16	1.10	1.03	0.96	0.89	0.80	0.69

Performance Charts

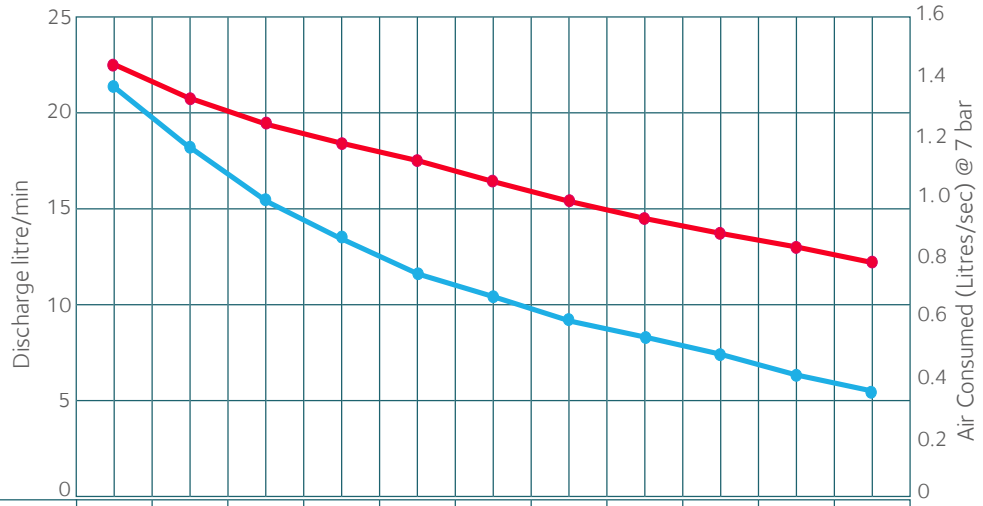
VP4 TL LDD



Well Depth (m)	10	15	20	25	30	35	40	45	50	55	60
Discharge LPM	32.7	27.4	23.9	21.0	18.2	16.1	14.1	12.2	10.6	9.6	9.1
Total Air (L/S) Requirement	1.28	1.25	1.22	1.16	1.10	1.05	0.98	0.91	0.85	0.76	0.66

Discharge LPM — Total Air (L/S) Requirement

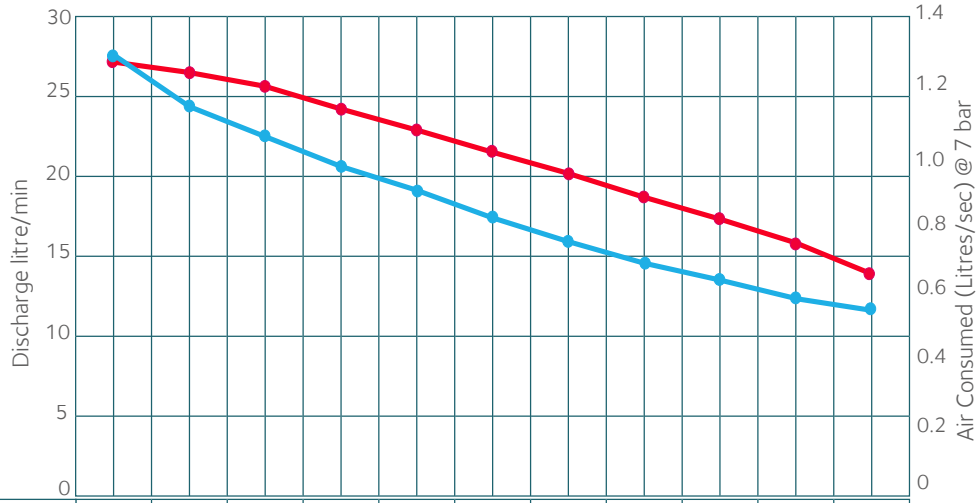
VP3 BL



Well Depth (m)	10	15	20	25	30	35	40	45	50	55	60
Discharge LPM	21.5	18.0	15.7	13.8	12.0	10.6	9.3	8.0	7.0	6.4	6.0
Total Air (L/S) Requirement	1.4	1.33	1.27	1.22	1.16	1.09	1.03	0.97	0.91	0.85	0.78

Discharge LPM — Total Air (L/S) Requirement

VP3 TL



Well Depth (m)	10	15	20	25	30	35	40	45	50	55	60
Discharge LPM	27.5	24.4	22.2	20.4	18.7	17.3	16.0	14.7	13.8	13.2	12.7
Total Air (L/S) Requirement	1.28	1.26	1.22	1.17	1.11	1.05	0.98	0.9	0.82	0.74	0.64

Discharge LPM — Total Air (L/S) Requirement

Longevity

Continuous Pumping

At Viridian we can offer a comprehensive pump maintenance service on all makes of pneumatic borehole pumps.

Maintenance and servicing is required for all types of pneumatic borehole pump, failure to comply with this minimum requirement will severely affect the pump performance.

We can service any size pump and may even be able to offer a replacement pump to maintain the pumping regime during the pump service.

Our fully equipped pump workshop can repair any brand of pneumatic pump. If required we can also offer a full report service to allow you to know exactly what has been repaired or replaced and why.

Service Exchange

If continuous pumping is a priority for your project Viridian Systems can arrange for a service exchange of your pumps. This service can include:

A visit to site by our fully trained installation technicians who will safely remove your existing pumps and install a suitable replacement pump from our service stock.

We will then bring your pumps back to our workshops where they will be fully serviced and tested before being returned back to you and re installed by our technicians.

Alternately we can arrange collection & delivery by courier of your pumps to our workshops.

A full pump service will include as a minimum:

- Cleaning
- De scaling
- Replacement of worn parts
- Air leakage tests
- Reassembly setting/adjustment

Contact us today for more information

Viridian Systems

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