

VERDERGEAR LIQUIFLO

Gear pumps

Verdergear
Safe and reliable
for viscous fluids



We put our heart into pumps

A well-functioning pump helps you succeed. That applies certainly to the most important pump in life, the human heart, but the same goes for pumps in business. At Verder, all energy and attention is focused on improving the quality and performance of our pumps and our service. We do so with energy, dedication and - most importantly - with our heart.

VERDER – PASSION FOR PUMPS

Verdergear

Gear pumps

Verdergear pumps are excellent for demanding applications with hazardous fluids or expensive chemicals. Thanks to the precise manufacturing tolerances and their linear flow rate, Verdergear pumps are perfect for dosing applications.



Your benefits

Reduces your costs - The pumps are extremely robust and reliable with long periods between planned maintenance and less production downtime. The accurate dosing reduces waste production batches and waste chemical.

Reduced risk - Verdergear pumps are leak-free thanks to the mag drive working principle. The fluid is contained within the pump with no wearable seals. The wide range of available materials can accommodate corrosive fluids.

Excellent performance - The design and principle of the Verdergear delivers excellent pumping performance. The pulse-free flow is kinder to your whole system; the pump can self-prime and dose with great accuracy. The pump can perform at higher system pressures and handle viscosities of up to 100,000 mPas.



Verdergear LIQUIFLO gear pumps

Verdergear Liquiflo pumps have been developed for specialist applications found in the process industry. The magnetic coupled models and standard models with packed mechanical seals are especially suitable for medium flow transfer and dosing. The Liquiflo magnet-driven, sealless models are leak-free and enable the safe pumping of sensitive and valuable liquids.

Since 1972, the Verdergear range has been produced for Verder by Liquiflo, a US manufacturer of renown. With relationships established across industry in chemical, aerospace, automotive and electronic sectors, customers can have peace of mind that their pump has been tried and tested in the most demanding of processes.



Area of application

Chemical

- Chemicals
- Bleach
- Lye
- Caustic soda
- Acids
- Solvents
- Polymers
- Hardener
- Resins
- Compound

Petrochemical

- Biodiesel
- Diesel
- Fuel additives

pharma & personal care

- Fragrances
- Perfumes
- Medicines
- Oils

Paint & Lacquer

- Pigments
- Dyes
- Food
- Syrup
- Icing
- Additives

Other

- High purity water
- OEM applications

The external gear pump employs a positive displacement (PD) working principle, generally used for the transfer and metering of liquids. A drive gear (driven by a motor) rotates an idler gear in the opposite direction. As the gear rotates, the liquid is trapped in between the gear teeth and transferred from the inlet side to the outlet side. As the fluid is moved around the gears at a constant speed, a pulsation-free flow is maintained.

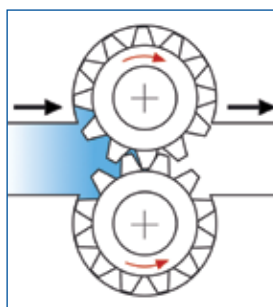


Fig 1: The pump is primed with the fluid filling the empty space between the 2 gears.

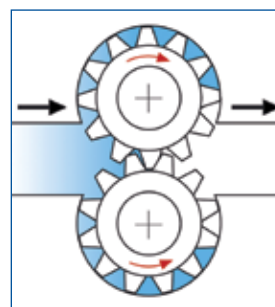


Fig 2: The fluid is then caught between the gears and is transported to the discharge side.

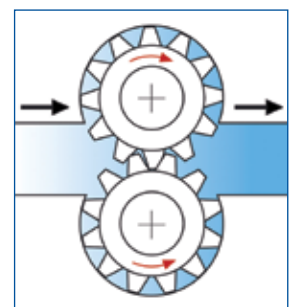


Fig 3: The fluid exits from the discharge side.



Verdergear LIQUIFLO H: Process pump

For heavy-duty, industrial applications, the H series provides a robust pump for medium-flow transfer and dosing applications.

The pump is constructed to provide a long service life with sturdy flange connections configured to industrial standards and a robust pump housing and bearing-shaft assemblies sized for significant loads.

The 'H' series can handle fluids of up to 100,000 mPas. The gear mechanism is available in different tolerances and in high-grade alloy material.

Flow rate	max. 220 l/min
Pressure	max. 15 bar
Temperatures	up to 260°C

Features:

- Pulse-free flow
- Corrosion-resistant materials
- Self-priming
- Very easy to operate
- Sealless, magnetic-coupled construction
- Ideal for high pressures and low flow rates
- Accurate dosing up to $\pm 0.5\%$
- Low maintenance
- Suitable for viscosities up to 100,000 mPas
- The direction of the pump can be reversed





Verdergear LIQUIFLO P: Corrosion resistant pump

The Liquiflo P range combines a stainless steel housing and a thick lining of Fluoro-polymer (PFA). Fluoro-polymers have the highest corrosion resistance of all plastics. Using a special moulding process, the PFA material is bonded with the stainless steel to isolate any metallic parts from the fluid. The result is a pump with the strength of a metallic model and the resistance to strong chemicals associated with non-metallic materials. The Verdergear Liquiflo P pump is an excellent choice for difficult media such as inorganic acids, bases and salts.

Flow rate	max. 57 l/min
Pressure	max. 7 bar
Temperatures	up to 93 °C

Features:

- SS316 housing and containment shell with PFA lining
- Shafts and bearings in carbon and silicon carbide
- Outstanding resistance to chemical corrosion and abrasion
- Same discharge pressure as a SS316 pump
- Bolt-connection flange with PFA lining
- PFA isolates the fluid from any metal parts
- The standard alloy-c containment shell limits eddy current development and subsequent heat generation
- The PFA-lined carbon fibre containment shell (option) eliminates eddy currents





Verdergear LIQUIFLO MAX: High pressure pump

The unique and robust design of the Verdergear Liquiflo Max range pump assures extended life even in high pressure pumping applications where other gear pumps could fail. The pumps in the Max range will handle differential pressures up to 24 bar and flows up to 76 l/min.

The Max Series pump features helical gears with a new design to reduce separation forces placed on the gear mechanism, creating a smoother and quieter operation.

The shaft and bearing assembly are built to operate at high differential pressures for extended periods of time. To avoid any possibility of the pipeline being distorted, the flange connections are joined with oversized bolts. The pump mounting bracket is made from stainless steel to eliminate corrosion even when exposed to the harshest environments.

Flow rate	max. 76 l/min
Pressure	max. 24 bar
Temperatures	up to 260 °C

Features:

- Extremely durable thanks to heavy duty construction
- Easy to maintain
- The most compact heavy duty gear pump on the market
- Quieter operating volume because of the helical gear design





Verdergear LIQUIFLO Pump key

Pump key

Position	H5F	S	6	P	E	E	2	0	0	0	0	0	S	S	0,37	1500	TF
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

W

No.	Position	Description
1	e.g. H5F	Pump size
		Material housing
	S	SS316 NPT
	C	Alloy-C flanged
2	H	Alloy-C NPT
	X	SS316 BSPT
	L	SS316 flanged
	Y	Alloy-C BSPT
		Material driving gear
3	1	Alloy-C
	6	SS316
	P	PEEK
		Material driven gear
4	1	Alloy-C
	8	Ryton
	6	SS316
	P	PEEK
		Material wear plate
5	E	Carbon 60
	4	Ceramic
	3	Teflon
	p	PEEK
		Material Bearing pin
6	E	Carbon 60
	B	SiC
	P	PEEK
		Seal
7	2	Magnetic coupled 14 mm (IEC 71-B5)
	3	Magnetic coupled 19 mm (IEC 80-B5)
	4	Magnetic coupled 24 mm (IEC 90-B5)
	U	Easy mechanical seal flat coal-ceramic
	L	Seal Teflon
	R	Seal Grafoil

No.	Position	Description
		Bearing flushing
8	0	-
	1	External bearing flushing
	2	Internal bearing flushing
		Shaft
9	0	Standard (Stainless Steel)
	1	Ceramic laminated
	2	WC laminated
		Material O-ring
	0	Teflon
	E	EPDM
10	6	SS316, PFA coated
	V	Viton
	B	Buna-N
	K	Kalrez
		Lock ring
11	0	Housing material
		Material Bearing pin
12	0	Teflon
	1	Alloy-C
	6	SS316
		Magnetic coupling
13	S	3.7 Nm
	K	28.2 Nm
	B	13.5 Nm
	J	56.4 Nm
	C	27.1 Nm
		Options
14	8	Temperature Trim
	S	Standard containment shell
	9	Viscosity Trim
	D	Double containment shell
15	e.g. 0,37	Power in kW
16	e.g. 1500	Speed in rpm
		Drive options
17	TF	400 V / 3 phases / 3 temperature sensors



Spare parts and accessories

There is an extensive program of accessories and spare parts available for Verdergear Liquiflo pumps. Spare part kits are available, including all wearable parts.

Bypass valve

For safety within the process, there should be a relief valve installed in the discharge line. This protects the pump and the pipeline pumping at closed discharge valves. Using a bypass removes the risk of overpressure and a breakdown of the pump will be avoided.

Relief valves

Verdergear Liquiflo pumps should always be installed with a Relief Valve in the discharge line, to protect the pump and piping against any type of line blockage, including the inadvertent closing of an isolation valve.

Model	Material	Connection
RV1000	SS316	½" NPT
RV1001	Alloy-C	½" NPT
RV2000	SS316	1" NPT
RV2001	Alloy-C	1" NPT

Heating jacket

To avoid changes in the characteristics of the medium from fluctuations in temperature, a heating jacket can be mounted at the pump head. This reduces the risk in changes of viscosity and or degradation, particularly when handling media that is temperature sensitive.

Multiple flange options

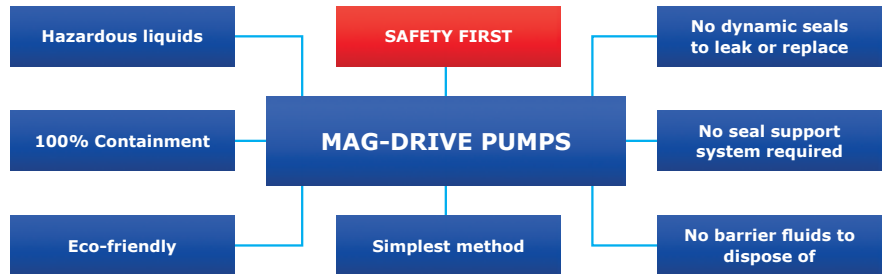
Verdergear Liquiflo gear pumps can be installed very easily as the large number of flange options allows compatibility with most major industry standards. Our technical specialists can assist you with selecting the best pump for you.





Advantages

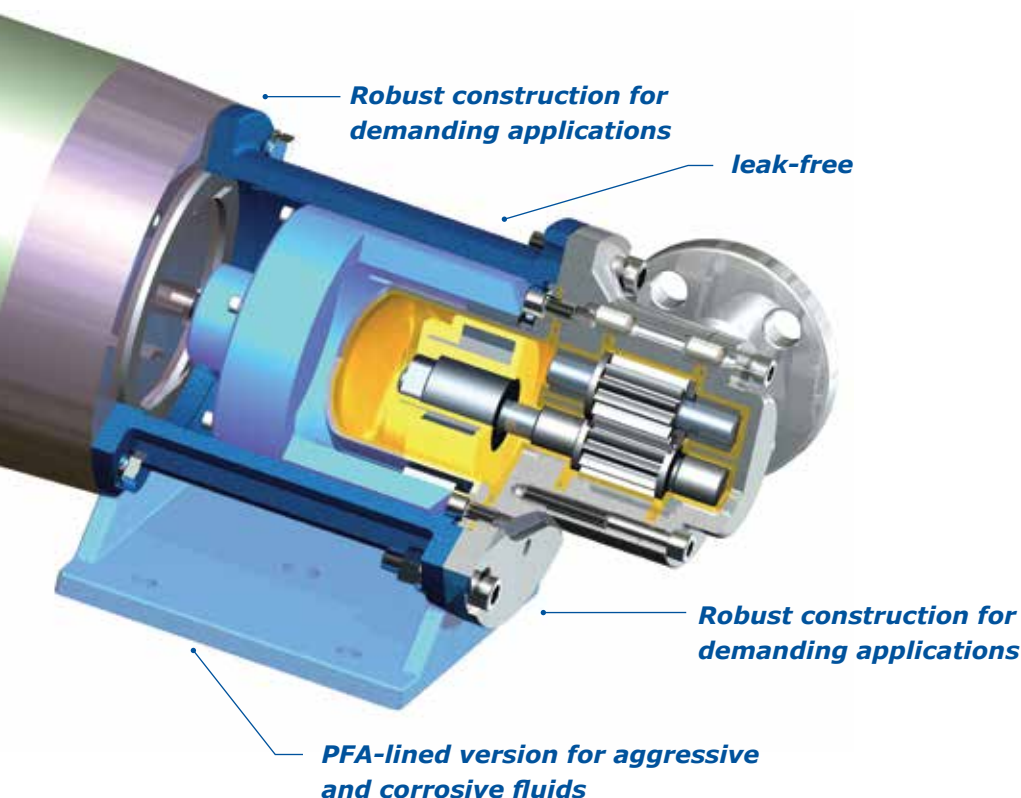
5 reasons to choose a Verdergear pump



1 Mag drive and leak-free

For absolute containment of the fluid from the environment and workforce, mag drive pumps are 100% leak-free. Mag drive pumps do not require dynamic seals, which wear and must be replaced or maintained and offer a very simple and safe solution to pumping hazardous, harmful, crystallized or dangerous liquids.

- Provide the simplest and safest method for hazardous liquids
- Ideal for applications where absolutely no leakage can be tolerated
- Typically less expensive than double-sealed arrangements
- Eliminates cooling loops required on double-sealed arrangements
- Removes the need to dispose of the barrier fluids required for double-sealed pumps
- Much less maintenance than an equivalent mechanical sealed pumps since there are no seals to inspect and replace
- No clean-up or administrative costs of a mechanical seal failing and a leak occurring





2 Accurate dosing

Gear pumps are used in many dosing applications because of their linear, repeatable and accurate flow characteristics. Gear pumps are also used in metering systems where the motor speed is controlled to regulate the pump output. Flow rate, pH levels or rotation speed can influence the control of remote control signals. With standard instrumentation such as flow meters, pH sensors and variable speed drives, accuracies of $\pm 0.5\%$ are easily achievable.

Verdergear pumps are available in a wide variety of flow ranges, simplifying the selection for metering applications.

3 One series, many solutions

The Verdergear Series provides a solution to several process needs with the extended range of flow rates, high pressures and chemical compatibility individual models can be specified for. For OEM requirements, smaller Verdergear models can be fitted with several different drive options.

4 Solutions for difficult liquids / applications

High Temperature Fluids

Solid or highly viscous chemicals (20°C) can be pumped more easily once they are heated to a more flowable state. We offer several materials and ancillary options for this purpose. We are able to evaluate the effect of temperature on any non-metallic component inside the pump. If necessary, these parts will be trimmed to ensure effective and efficient operation at the pumping temperature. The ancillary options include the Liquiflo dual-can temperature control jacket.

Highly viscous fluids

The Liquiflo H gear pumps are excellent for polymers in water treatment and fluids in the food processing industry (up to 80.000 mPas). When pumping high viscosity media, it is preferential to specify an over-sized pump, running at a slower speed to allow the viscous media to enter the pump and fully fill the gear teeth cavities. The outer gear diameters are usually trimmed to increase pump efficiency. When pumping highly viscous fluids, slip is not an issue. Running an over-sized pump at a lower speed has the additional benefit of extending the life of the pump, reducing friction losses in pipe work and reducing fluid shear.

5 Maintenance-free, robust and long-lasting

Verdergear gear pumps are very reliable. The magnetic coupling and the precise manufacture of the gears enables near maintenance-free operation of the pumps. The total cost of ownership of the pump is greatly reduced with fewer inspections, planned services and spare parts.



Do you have questions? If you have questions concerning our pumps or special applications, please do not hesitate to contact us. www.verder.com.