Hydra-Cell®

Seal-less Pump Technology

Marine and Offshore

"Robust Design – Reliability"

Hydra-Cell® in Marine Applications

Versatile pumping technology

The unique attributes of Hydra-Cell pumps offer distinct benefits in a range of marine applications.

- Low Sulphur Fuel Transfer
- Chemical Injection / Dosing
- Cleaning
- Ballast Neutraliser Metering
- Reverse Osmosis
- Fuel Emulsification
- Emissions control

Hydra-Cell® is used across a wide range of marine applications in:

Hydra-Cell®
Seal-less Pump Technology

Typical Liquids Pumped	Challenges in Pumping	The Hydra-Cell® Advantage
Light, Ultra-Low Sulphur Fuels**… for engines, auxiliary power units (APUs), boilers etc	• Low viscosity, 0.1 to 5 cSt makes pumps with potential leak paths inefficient (gear and screw pumps) • Pumps with dynamic seals are susceptible to leaking when changed over from high viscosity duty • Escaped vapours can be toxic/explosive	• Seal-less design prevents leakage • Positive displacement for optimum efficiency • Pump flow independent of viscosity • DNV certification available***
Residual Fuel Oils (RFOs)… for engines, auxiliary power units APUs, boilers etc	• Preheated in order to achieve flow… 65°C (150°F) and above • Contain particulates even after centrifuge • Abrasive	• Pump flow independent of viscosity • Seal-less design handles particles up to 500µm dia. • Operate at extreme temperatures with no detriment • Run-dry capable • DNV certification available***
Seawater… for reverse osmosis (RO) water purification	• Non-lubricating and corrosive • Can contain particulate matter	• Corrosion resistant liquid head materials • Compact size, small footprint • Efficient high pressure capabilities • DNV certification available*** • Can handle particles up to 500µm dia.
Seawater…for pressure cleaning / spraying / rinsing	• Non-lubrication • Potentially corrosive	• Corrosion resistant liquid head materials • Compact size, small footprint • Efficient high pressure capabilities • DNV certification available***
Seawater… for high pressure misting for fire suppression and pressure spraying for exhaust gas scrubbing (EGC)	• Non-lubrication • Potentially corrosive • Can contain particulate matter	• Corrosion resistant liquid head materials • Compact size, small footprint • Efficient high pressure capabilities • DNV certification available***
Ballast Water Treatment Chemicals… aldehyde, bromine, chlorine, and hydrogen peroxide based biocides. Sodium thiosulphate, pentahydrate TRO neutralizers.	• Potentially corrosive • Vapours are harmful • Can form solid crystalline deposits	• Corrosion resistant liquid head materials • Seal-less design prevents leakage • Accurate metering performance • DNV certification available*** • Run-dry capable • Can handle particles up to 500 µm dia.
Sodium Hydroxide Solutions… High pressure spraying for exhaust gas scrubbing (EGC)	• Can contain particulate matter • Non-lubricating and corrosive • Vapours are harmful	• Corrosion resistant liquid head materials • Efficient high pressure capabilities for spray • Seal-less design handles abrasives and particulate matter • DNV certification available*** • Can handle particles up to 500 µm dia.

**Changing to low viscosity, low sulphur fuels, as dictated for use in Sulphur Emission Control Areas (SECAs), can prove problematical for the gear and screw pumps conventionally used for pumping high viscosity residual oils. Lack of pumping efficiency, fuel leaking past dynamic seals and vapour escape are common problems.

Hydra-Cell® positive displacement, seal-less pumping technology overcomes such problems.

DNV Certification

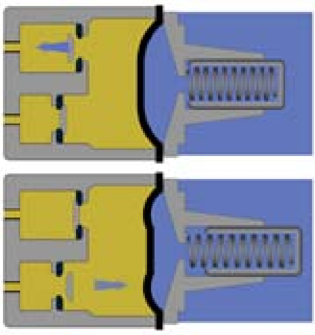
*** Wanner supplies marine pumps certified by Det Norske Veritas (DNV) an independent maritime Classification Society. The Product Certificates outline intended service, pump rating (in terms of flow and pressure) and service restrictions, while specifying the intended destination vessel.

Hydra-Cell® advantages

There are widespread applications for Hydra-Cell® pumps throughout the marine industry. Pumping low viscosity, low sulphur fuels, producing shipboard drinking water, the chemical dosing of ballast water and many other applications could all benefit from the use of Hydra-Cell's unique seal-less, multi-diaphragm pumping technology.

No dynamic seals, cups or packings

- Liquids are 100% sealed from the atmosphere
- No leak path for fluids or vapours
- No seal maintenance
- No seal wear related performance deterioration
- Run dry capable



Robust design

- Designed and built for long service life
- Simple maintenance with no special tool requirements
- No critical tolerances to be aware of during maintenance
- In-situ service possible

Accurate, controllable flow rate

Flow rate is independent of discharge pressure so Hydra-Cell® pumps do not suffer any drop off of flow with increased discharge pressure (also no drop off of flow due to seal wear).

Flow rate is directly proportional to shaft speed, so flow can be governed accurately through motor speed control, 10RPM to 1500 RPM.

	G-Series
Steady state accuracy	>±1%
Repeatability	>±3%
Linearity	>±3%

Safe operation

Being totally sealed, Hydra-Cell® pumps are safer in operation when pumping volatile, flammable liquids that could escape from pumps with dynamic seals and potential leak paths.

Wide viscosity capability

Hydra-Cell® pumps cope admirably across a wide viscosity range from 0 – 6000 cPs.

Wide range of materials of construction

Liquid head materials

For pumping fuels, cast iron is recommended.

For seawater applications Duplex stainless steel is recommended.

For pumping chemicals, a wide range of materials is available for selection, including:

- Hastelloy®
- Polypropylene
- Kynar® PVDF
- 316 Stainless Steel
- Brass

Diaphragm materials

A variety of diaphragm materials is available to suit varying performance conditions, including:

- EPDM
- Viton®
- PTFE
- Neoprene
- Buna
- Aflas

Pump selection

Ship engine - Transferring
Ultra low Sulphur fuels

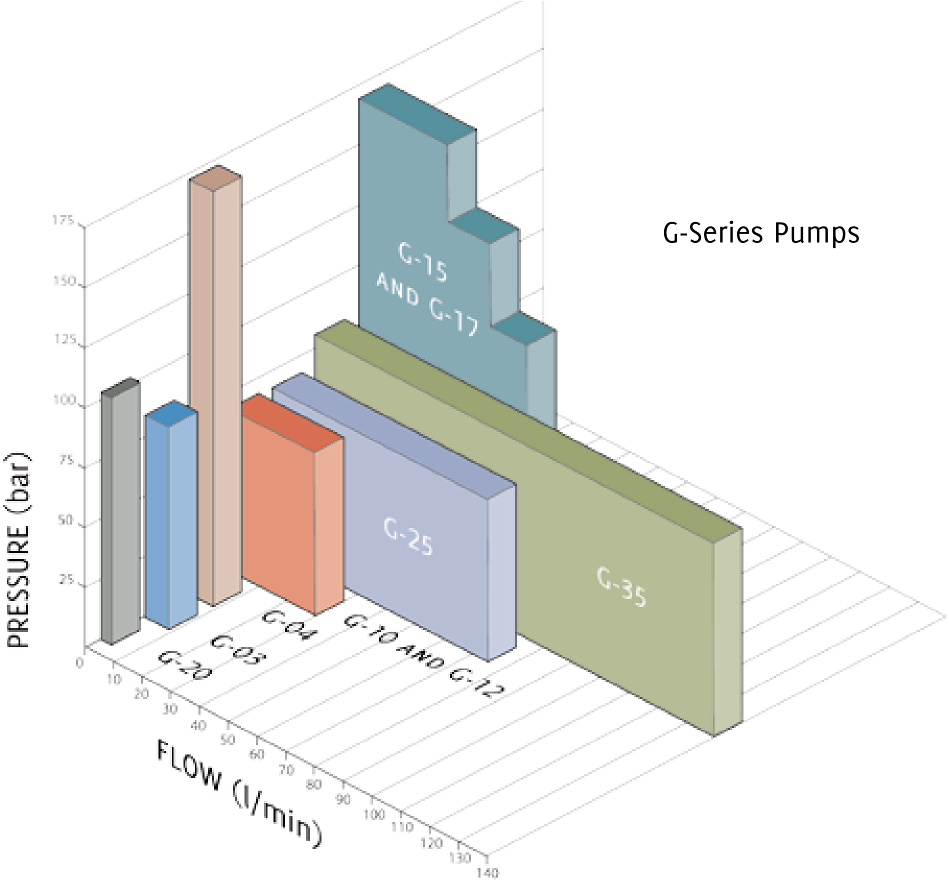
Hydra-Cell G-Series High Performance, Positive Displacement Diaphragm Pumps

Hydra-Cell® G-Series heavy-duty pumps are designed to pump corrosive, abrasive and highly aggressive liquids up to 8000 litres per hour in a highly controlled and efficient manner.

Hydra-Cell's ability to tolerate particles enables them to pump seawater, wastewater and even heavy residual oils without the need for fine filtration.

The hydraulically balanced diaphragm arrangement assures long life in a seal-less unit that is both compact and highly energy efficient.

Run dry capable, Hydra-Cell® pumps require very little maintenance and deliver smooth, low pulsation flows for many high-pressure transfer, injection, spraying and dosing applications.



G-Series Pumps

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Version 4. 06/11