

# DW Fuel Pump (Marine)

## Description

Deepwell, cryogenic multi-stage centrifugal pump. Designed for continuous variable frequency operation.

Capacity: 0.25 - 35 m<sup>3</sup>/h  
 Head: 20 - 400 mlc  
 NPSHR: 0.25 mlc  
 Temperature: -163°C - 50°C

## Typical applications

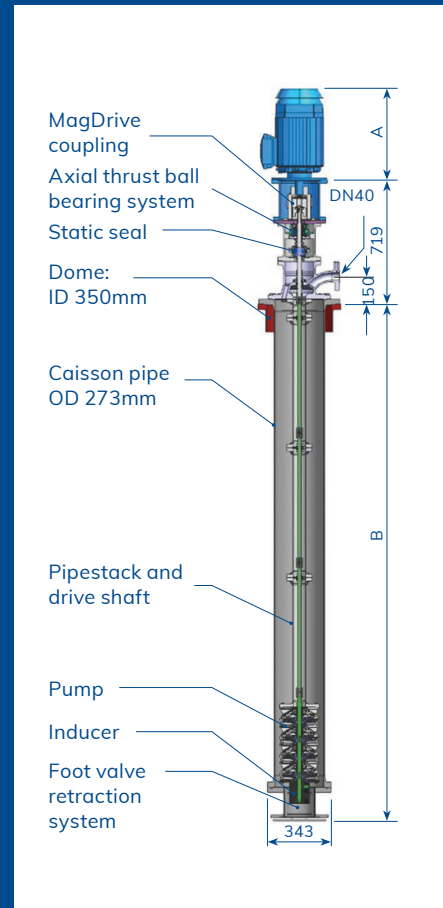
LNG, Ethane and LPG fuel pump, spraying and stripping pump.

## Benefits

- All electrical components located outside fuel tank
- No heat transfer from motor to liquid gas
- 5 year or 25,000 h service interval,
- Pump can be retracted even with gas in the tank.

## Standard materials

All materials handling liquid gas are made of cryogenic stainless steel.



## Technical specifications

Pump Model	Capacity range* (m <sup>3</sup> /hr)	Head (mm)	Differential pressure for LNG** (Bar)	Power consumption at nominal duty point (kW)	Motor size*** (kW)	A (mm)	B (mm)
EFP11-4	0.6 - 13	20 - 220	1 - 11	8	10	742	
EFP11-8	1.3 - 13	20 - 400	1 - 20	16	20	766	
EFP24-4	0.8 - 35	20 - 240	1 - 12	15	20	766	
EFP24-8	1.5 - 35	20 - 400	1 - 24	31	34.5	734	

\* The pumps can operate down to 0.25 m<sup>3</sup>/h in short intervals up to 15 minutes.

\*\* Calculated for LNG at specific gravity 500 kg/m<sup>3</sup>.

\*\*\* Motor size calculated for LNG for 3 x 440, 60 Hz. All other voltages are available on request. Pump discharge flange EN DN40. ASME and JIS available on request.

The DW Fuel pump is a long shafted cryogenic deepwell, multistage centrifugal pump designed for continuous operation with variable speed drive.

The pump is available in two flow sizes with nominal flow at 11 and 24 m<sup>3</sup>/h, each size is available in two pressure versions: 8 and 18 Bar, designed to fit standard 4 and 2 stroke engines. The pumps have a minimum flow as shown in the above table, but can in shorter

periods operate at flows as low as 0.25 m<sup>3</sup>/h.

DW Fuel pump can be installed in a caisson pipe with a retraction system, which enables the pumps to be extracted even with liquid gas in the tank.

The pump is designed with a hermetically sealed MagDrive coupling, separating the gas in the tank system from the surroundings.

All electrical components, including the motor are situated outside the tank, which means that excessive heat from the motor does not increase Boil Off Gas and pressure in the tank.

The Svanehøj control system is a standard panel that maintains the desired pressure at the gas valve unit inlet, following the engine load.

## MagDrive Coupling

The MagDrive consists of an inner and outer magnet coupling. The two magnetic couplings are separated by a hermetically sealed barrier. When the motor rotates the outer magnet, the inner magnet will then rotate the pump drive shaft due to the magnetic forces. This then systematically removes any risk of gas leakages through a shaft sealing.

## Pump Retraction System

The foot valve can be activated from outside the fuel tank. When the foot valve is closed, the caisson pipe can be purged with nitrogen and the pump can be retracted for repair, even with liquid gas in the fuel tank. The pump can be lifted in one piece or in sections of 700 mm by means of a special lifting tool. A set of combined blinds with a small flow of inert gas prevents moisture and ice in the caisson.

## Static Seal

The static seal is a mechanical seal that seals off the bearing system and the MagDrive coupling enables access and repair. It is activated and purged by nitrogen pressure.

## Svanehøj Control System

Standard control panel 2 parallel Variable Frequency drive (VFD) control systems.

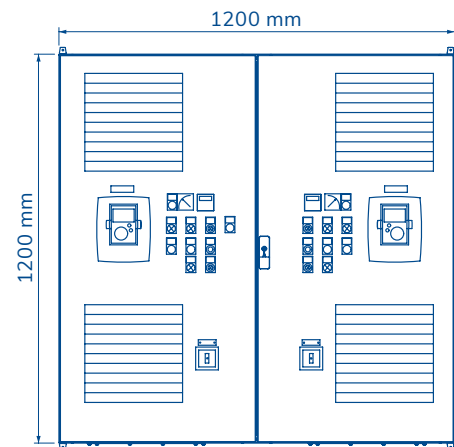
The control panel can be used for one fuel pump having one active VFD and one stand-by VFD, or for two VFD operated fuel pumps.

PID-regulators will keep a steady pressure from the pump(s).

Set-value and sensor feed-back can be applied from SAS (Ship Automation System) or from a 4-20 mA pressure sensor. Interface for control from SAS can

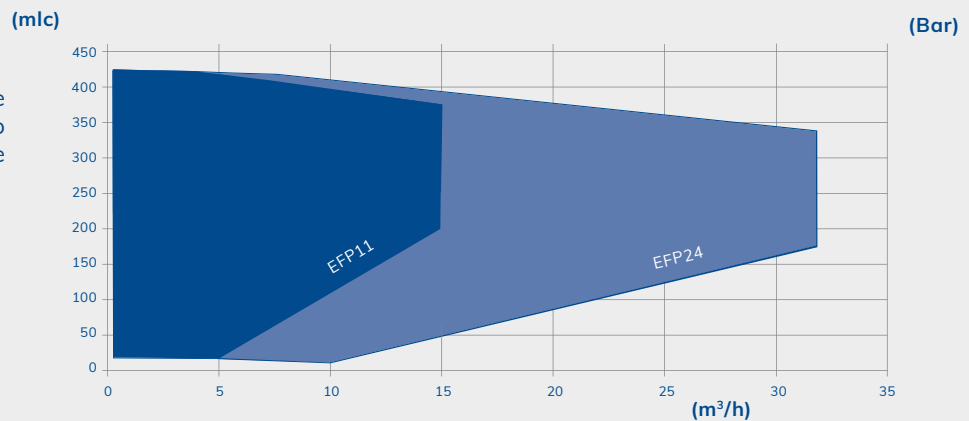
be hardwired signals or via ModBus.

A remote control panel for installation in the control room can be applied. In the control panel front there is a manual control panel for emergency cases, enabling the pump to run even if the pressure feedback fails.



## Capacity range

The pump curves show the operation area of each pump when controlled by variable frequency drive.



**Note:** Other capacities are available with variable frequency drive.

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