

HP NH3 BOOSTER PUMP

MODEL: HP NH3 BOOSTER PUMP
FUEL: AMMONIA (NH3)

Description

Skid-mounted, multi-stage centrifugal pump. Designed for continuous variable frequency operation.

Capacity

Up to 37m³/hr

Differential pressure

- 10 stages: $\Delta p = 65 \text{ bar} / 1200 \text{ mlc}$
- 12 stages: $\Delta p = 77 \text{ bar} / 1434 \text{ mlc}$

Discharge pressure

Max. 90 / 102 bar (10 / 12 stages)

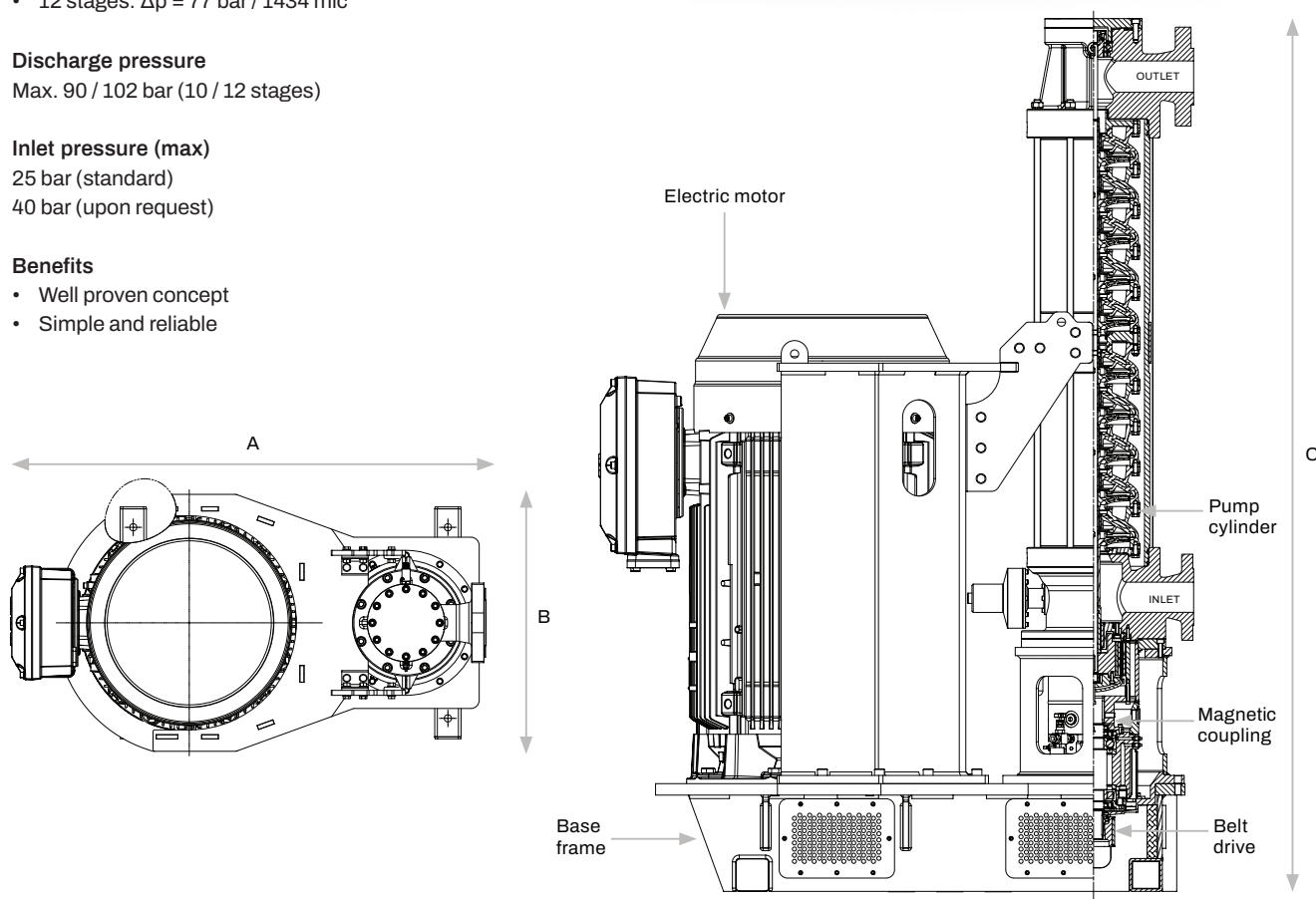
Inlet pressure (max)

25 bar (standard)
40 bar (upon request)

Benefits

- Well proven concept
- Simple and reliable

- Unmatched safety
- Small foot-print
- Easy to access during service & maintenance
- Unique Dual Capability – one supplier for LP and HP Pumps
- With this launch Svanehoj offers a unique ability to provide both Low-Pressure (LP) and High-Pressure (HP) fuel pumps



DIMENSIONS

Pump model	A	B	C	Weight (kg)
10-stage	1447	780	2130	2236
12-stage	1447	780	2430	2324



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TECHNICAL DESCRIPTION

The HP NH3 is a belt-driven multi-stage pump, designed for continuous operation with variable speed drive.

The pump cylinder is based on the DW Fuel Pump, which has a well-proven design stretching across numerous running conditions i.e. various pressure ratings, pump media and use.

Supplied with 25 bar ammonia, the HP NH3 pump is able to deliver a discharge pressure of 90 bar or 102 bar

(10- / 12-stage), making it the ideal solution for supply of ammonia to main engines, auxiliary engines and turbines.

The Svanehoj control system is a standard panel that maintains the desired discharge pressure, by adjusting the running speed of the pump.

Magdrive Coupling

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

Fail-safe

In the unlikely event that the coupling containment shroud is breached due to a pressure surge or mechanical failure, ammonia will not escape to the surroundings. A sealed coupling housing shrouds the magnetic coupling and this prevents ammonia from escaping. A set of specially designed high-speed VR-seals is mounted in the housing which seals against the rotating drive shaft. If ammonia is detected in the sealed coupling housing, an automatic shutdown is issued.

Serviceability

The pump is designed with focus on easy access during service and maintenance. The belt drive is easily accessible and can be replaced by loosening the belt auto-tensioner only.

After venting of the pump cylinder, the top bearing is easily replaced. Where further dismantling of the pump cylinder is required, the complete pump cylinder can be lifted from the skid and transferred to an adequate work site. Only 140 mm of overhead space is required to separate the pump cylinder from the pump base.

Svanehoj 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. Svanehoj Control System can be supplied with a range of communication protocols, to match the SAS.

Draining

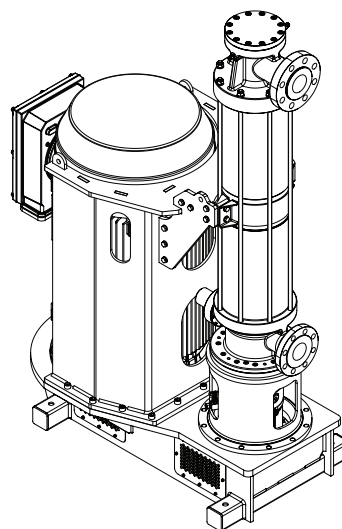
A remotely operated valve is mounted on to the pump cylinder to facilitate draining. During normal operation of the NH3 pump, the drain valve is kept closed by a set of springs. To open the valve, pressurized air is applied. When the valve is open, a passage is created for any entrapped ammonia to flow from the pump cylinder to the inlet. Draining the pump via the valve will remove all liquid except for a small amount trapped in the inner part of the magnetic coupling. This residual liquid (<0.5L), must be evaporated.

Reliability

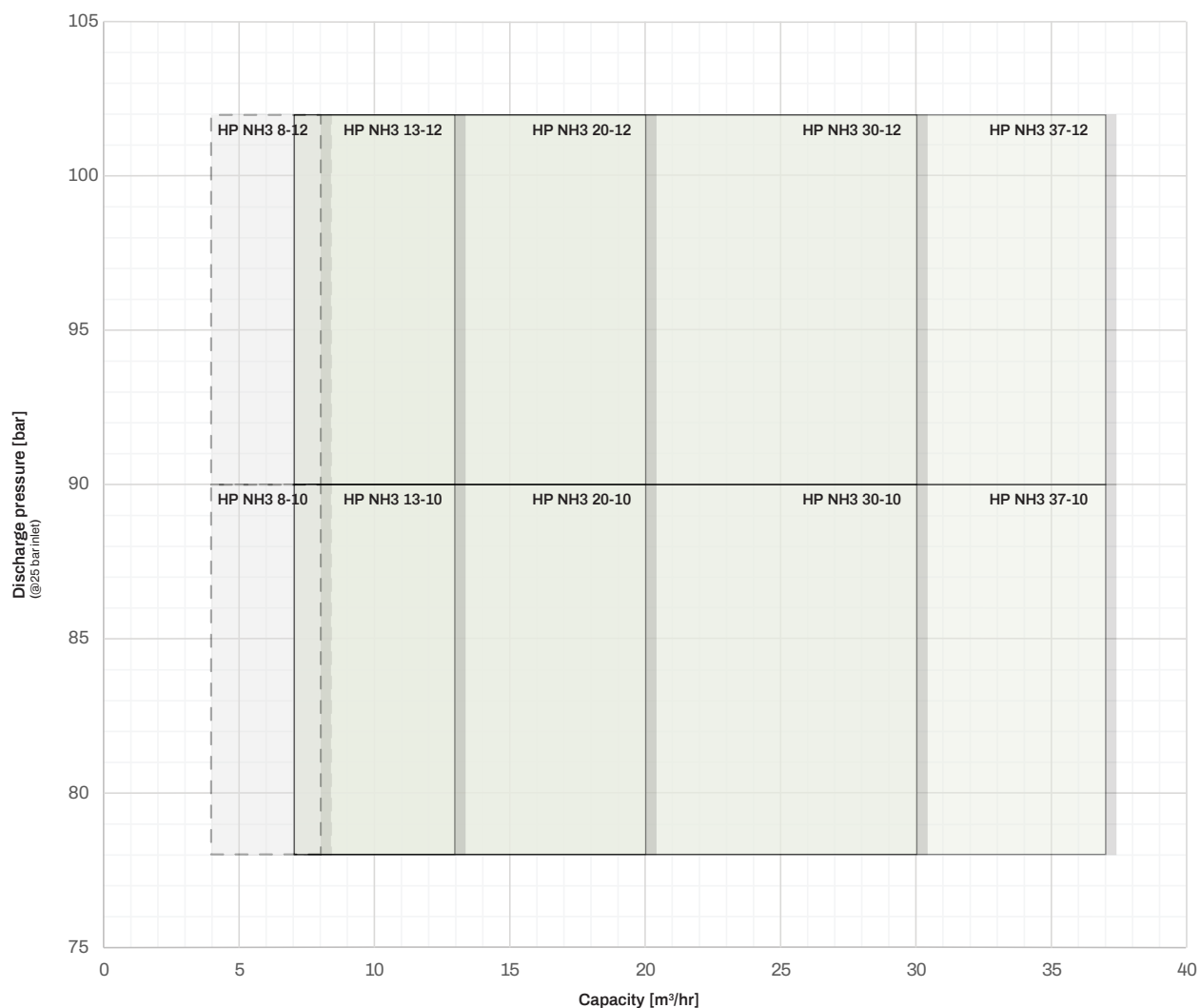
20.000 hours between major overhauls due to the wellproven design, based on the DW Fuel Pump.

Capacity range

Up to 37 m3/h.



PERFORMANCE



SPECIFICATION 10 stage variants	Variant	Variant	Variant	Variant	Variant
Model	HP NH3 Booster 8 (HP NH3 8-10)	HP NH3 Booster 13 (HP NH3 13-10)	HP NH3 Booster 20 (HP NH3 20-10)	HP NH3 Booster 30 (HP NH3 30-10)	HP NH3 Booster 37 (HP NH3 37-10)
Media	Ammonia (NH ₃)				
Media temperature	-33degC to 55degC				
Design pressure	Δp = 65 bar (971mlc@SG 0.682 / 1195mlc@SG 0.555)				
Max. working pressure / outlet	20-25 bar (standard) 20-40 (by request)				
100% flow (m³/hr) (L/min)	8 (133)	13 (217)	20 (334)	30 (500)	37 (617)
Min. flow (m³/hr)	TBD	7	7	7	7

SPECIFICATION 12 stage variants	Variant	Variant	Variant	Variant	Variant
Model	HP NH3 Booster 8 (HP NH3 8-12)	HP NH3 Booster 13 (HP NH3 13-12)	HP NH3 Booster 20 (HP NH3 20-12)	HP NH3 Booster 30 (HP NH3 30-12)	HP NH3 Booster 37 (HP NH3 37-12)
Media	Ammonia (NH ₃)				
Media temperature	-33degC to 55degC				
Design pressure	Δp = 77 bar (1151mlc@SG 0.682 / 1416mlc@SG 0.555)				
Max. working pressure / outlet	20-25 bar (standard) 20-40 (by request)				
100% flow (m³/hr) (L/min)	8 (133)	13 (217)	20 (334)	30 (500)	37 (617)
Min. flow (m³/hr)	TBD	7	7	7	7

