



DECK PUMPS FOR BALLAST

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SINCE 1955

TECHNICAL BROCHURE

DECK PUMPS JD-8-300 G

FOR BALLAST OPERATIONS

Fagioli Varisco SIMPLE vacuum assisted self-priming centrifugal pump units are highly dependable pumps suitable for sump pump- ing on site during ballast operations. The unit is a heavy-duty J series self-priming centrifugal pump handling liquids containing solids in suspension. A separator, closely joined to the liquid pump casing, forms a chamber where air or entrained gases can separate from the liquid and is drawn into a vacuum pump. The vacuum pump makes it possible for the unit to prime “dry” (without first having to fill the pump casing with liquid) and can handle considerable quantities of air, allowing the priming of the wellpoint system and maintaining it under vacuum, or draining an excavation thoroughly under “snore” conditions.

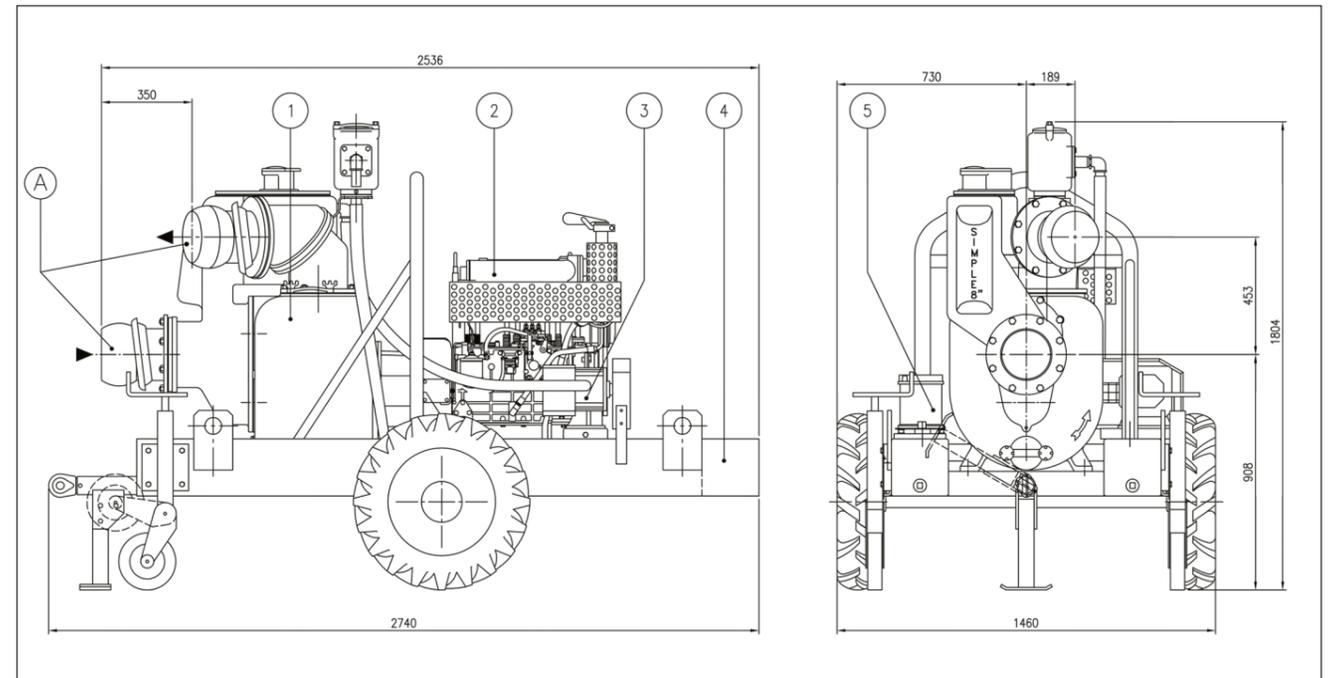
BENEFITS

- Automatic dry priming with vacuum pump
 - High continuous air capacity
 - Self-priming centrifugal pump which secures operation in case of a fault with the vacuum pump
 - Large diameter solids handled
 - Robust construction: cast iron separator and stainless steel float mechanism
 - Oil lubricated vacuum pump with oil recovery system
- FEATURES
- Cast iron separator.
 - Liquid entry in line with the impeller to reduce friction losses.
 - Vacuum pump oil reservoir incorporated in the separator to cool the oil.
 - Bronze air valve seats and brass suction and discharge check valve seats to resist salt water.
 - Oil lubricated vane type vacuum pump with built-in cooling fan

ENGINE DRIVEN UNITS

- Vacuum pump driven by the rear PTO of the diesel engine through V-belt and belt tightener.
- Arrangement on heavy duty two wheeled site trailer incorporating fuel tanks for 24 hours of operation.

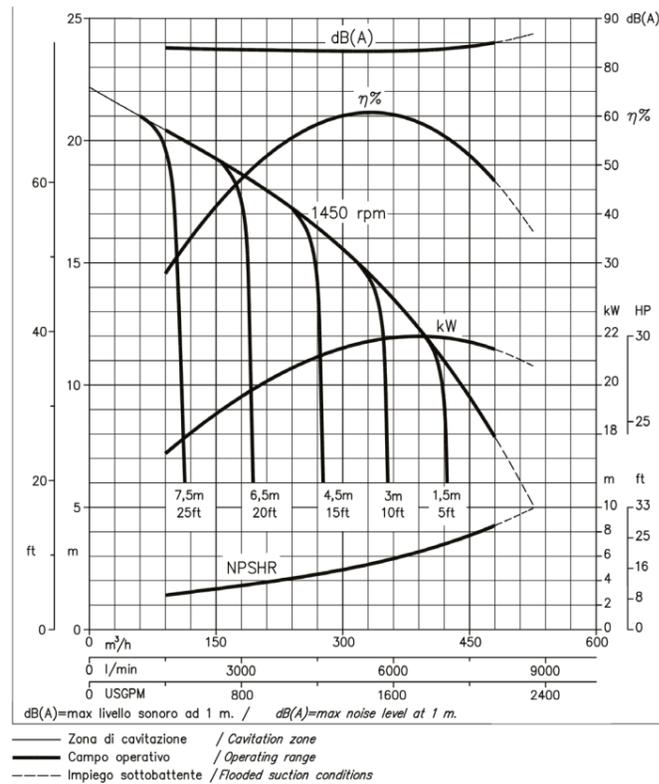
Model	Port Size	Solids	Capacity m3/h (max)	Head m (max)	Speed rpm	Power kW
JD 8-300	200mm / 8" inch	60	550	27	1600	32



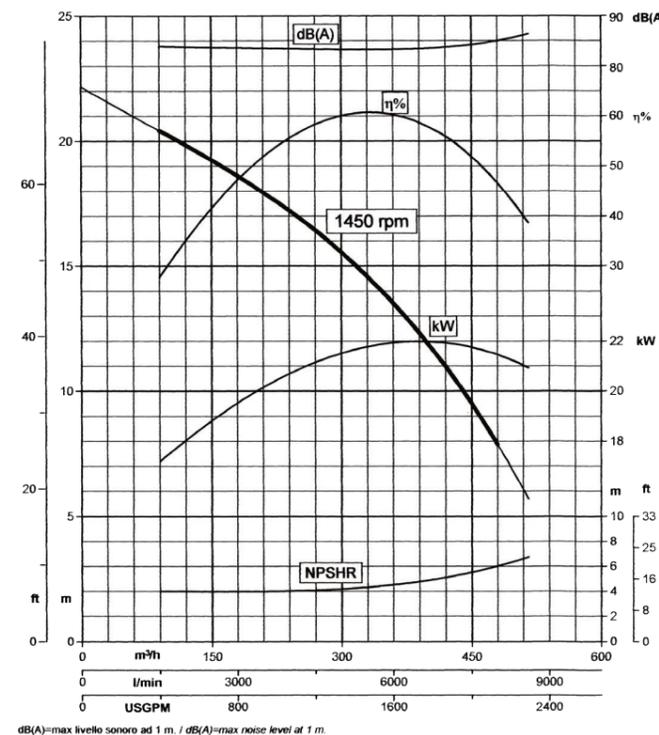
PERFORMANCE CURVES

TEST ACCORDING TO ISO 9906- 2ND LEVEL

Water density: 1000 kg/m³- Solids handling: D.60 mm
 Priming time: 37 s (with a suction lift of 1.5 m)
 Impeller diameter: 297mm
 Number of vanes: 4- Installed power : 22 kW- 50 Hz



TEST ACCORDING TO ISO 2548- CLASS C



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FAGIOLI BALLAST SYSTEM DESCRIPTION

Fagioli Load Out Ballast System is composed by Self-Priming Centrifugal Pumps with a maximum capacity of 600 m³/h. These pumps have been designed by Varisco in collaboration with Fagioli Engineering Department that have a great Experience in Load Out and Load in Operation, Planning and Design. This Pump is ideal for pumping sea water with solids in suspension. Actually Fagioli own more than 40 Pumps (Construction Year 2012/2013) that can be used to arrange the most suitable Ballast System evaluated case by case on the base of the boundary conditions. For load out design phase, we usually consider a Nominal Capacity of 350 m³/h that is guaranteed @ 1800 rpm with suction head ranging from 1.5m up to 6m. Said Standards and Codes take into account the Tide Rage Variation, the criticality of the Operation, the dimensions of the Barge and the nominal capacity of the pumps. Following this calculation, we are sure to design and arrange a Ballasting System that allow to operate on the Barge in a Safe and cheaper condition.



FAGIOLI BALLAST SYSTEM DESCRIPTION



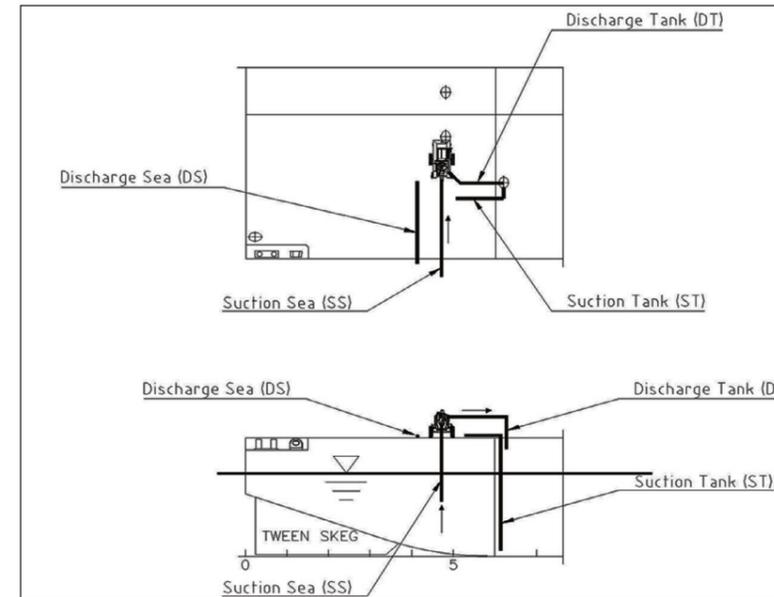
The pipe lines of the system are composed by hoses with a diameter of 8" equivalent to 200mm. This size allows the reduction and optimization of the loss of pressure during pumping. In case of emergency the pump flow can require to be reversed. Fagioli always arrange contingency hoses close to the pumps in order to be quickly connected to the pumps reversing the flow if required.

Pumps which require to be reversed in order to be considered as part of the back-up capacity shall be capable of such within 10 minutes, and adequate resources shall be available to perform this operation. An on-site test was conducted to check that the required time is less than 10 minutes (Usually it is not higher than 5 minutes).

A dedicated system to reverse the flow acting only on valves can be arranged to avoid the disconnection of hoses during contingency time.



PUMP REVERSE FLOW OPERATIONAL PROCEDURE



These are the main operational sequences to be followed on site during ballasting operations to reverse the pump water flow of a Self Priming and Vacuum Assisted Centrifugal Motor Pump. At the beginning of the load-in / load-out operations, the pump is set up to aspirate water from the sea (or from the Barge Tank) and discharge the water into the Barge Tank (or into the sea) according to the Ballasting Calculation report. In this operational procedure is assumed an initial condition where the pump is pumping water from the Sea to the Barge Tank as per the following sketch. For each pump will be provided the following hoses:

- Two long hoses (ST and SS). One side of these hoses are connected to the Pump Suction. The other side of these hoses must be inserted one into the Barge Tank close to the Barge Keel (the label of this hose is ST, Suction Tank), and the other hose must be into the sea (the label of this hose is SS, Suction Sea).
- Two short hoses (DT and DS). One side of these hoses are connected to the Pump Discharge. The other side of these hoses must be insert one into the Barge Tank at the entrance of the Barge Man Hole (the label of this hose is DT, Discharge Tank), and the other hose must be positioned onto the Barge deck towards the sea (the label of this hose is DS, Discharge Sea). Due to the Ballasting Starting condition, in order to have a flow direction from the sea to the Barge Tank, the long hose into the Sea (SS) must be connected to the Pump Suction and the short hose into the Barge Tank (DT) must be connected to the Pump Discharge.



PUMP REVERSE FLOW OPERATIONAL PROCEDURE



PHASE 1: Switch-off the engine pump.



PHASE 2: To make easy the hose removal, open the air inlet valve in order to restore the atmospheric pressure inside the hose and discharge the water column. Before the removal of the hose, close the air inlet valve.

PHASE 3: A Ballasting Operator supports the hose while the second Ballasting Operator releases the main quick coupling.



PHASE 4: Release the secondary quick coupling.

PHASE 5: The hose Discharge Tank (DT) is taking off from the hose connection and lay down on the Barge Deck.

PHASE 6: The Ballast Operators grab the DS hose from the deck, lift and approach it at discharge hose connection.

PHASE 7: The secondary quick coupling is locked on the hose connection.



PHASE 8: The main quick coupling is locked on the hose connection, using the steel pipe to operate against the locking lever resistance.

PHASE 9: The Discharge Tank hose (DT) has been replaced by Discharge Sea hose (DS).

PHASE 10: Open the air inlet valve in order to restore the atmospheric pressure inside the hose and discharge the water column. Before the removal of the hose, close the air inlet valve.



PHASE 11: A ballasting operator supports the hose while the second Ballasting Operator release the main quick coupling.

PHASE 12: Release the secondary quick coupling.

PHASE 13: The hose Suction Sea (SS) is take off from the hose connection and lay down on the Barge Deck.

PHASE 14:The Ballasting Operators grab the hose (ST) from the deck, lift and approach it at suction hose connection.



PHASE 15:The secondary quick coupling is locked on the hose connection.

PHASE 16: The main quick coupling is locked, using the steel pipe to operate against the locking lever resistance.

PHASE 17: The Suction Sea hose (SS) has been replaced by Suction Tank hose (ST) and the pump can be switched on.



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