Bottom discharge systems

Speed and simplicity

The key function of bottom discharge systems is to permit rapid and complete discharge of soil via the hopper bottom, offer reliable operation and a perfect bottom seal. The two main types of bottom discharge system are bottom doors and conical bottom valves. They are an integral part of hopper design, normally installed at new build but also as retrofit. Their reliability, efficiency and durability are key factors in raising the productivity of the dredging cycle.

sealing is outstanding.

Bottom doors

There are broadly two variants of bottom doors; single and double, selected according to vessel configuration, discharge speed required and size of hopper. Both are of hinged, closed box-type construction and complete with necessary lifting eyes. The bottom doors are operated by rods actuated by hydraulic cylinders generally mounted above the hopper. The cylinders can also be placed in the hopper or void spaces. The design of the doors is such that surface smoothness ensures fast discharge and, if repairs are needed, they are relatively easy to remove from the ship.

Conical bottom valves

Conical bottom valves consist of a valve assembly, a guide fin assembly, a valve seat built into the vessel bottom and an actuating mechanism. While generally built in, IHC Parts & Services conical bottom valves are also ideal when the bottom dumping function has to be added to a vessel after construction. Conical bottom valves mean discharge is particularly smooth, sealing is outstanding and discharge in shallow water is simple and convenient.

Pre-dumping doors

When a vessel must discharge hopper contents in waters that are too shallow to allow the bottom doors to open safely, pre-dumping doors can be used. These allow partial discharge to reduce the draft of the vessel prior to full discharge through the bottom doors. The actuating mechanism is generally through the bulkhead and placed in the void spaces. Alternatively a gate valve in the overflow support pipe can serve a similar function.

Partial discharge to reduce draft.

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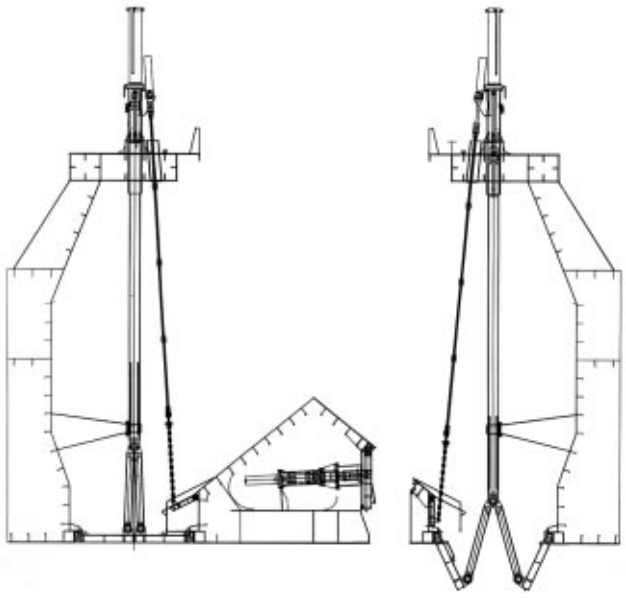
Self-suction channel doors

Self-suction channel doors are long narrow doors installed above the bottom doors forming the top side of the suction channel and hydraulically controlled generally by a chain mechanism from above the hopper. Alternatively self suction pipelines through void spaces are connected to the hopper by gate valves. The designs of both pre-dumping doors and self-suction channel doors are carefully balanced with the nozzles and jet pumps to ensure fastest hopper discharge possible.

Benefits include:

- simple and robust designs
- choice of materials according to soil character
- favourable price/quality ratio
- new build, conversion and retrofit
- rapid discharge thanks to absence of obstructions
- reduced risk of fouling
- excellent sealing preventing losses and propeller damage
- no vulnerable parts below waterline
- seal and valve replacement without dry docking
- smooth valve seating for lower resistance when steaming

High integrity system.



Full integrity

Parts & Services bottom discharge systems are designed on the basis of client requirements and the company's long experience. In its carefully studied designs Parts & Services ensures a high integrity system that means optimal effectiveness, a long and safe operating life and low levels of breakdown. Hand or mechanically operated wedges lock bottom doors for cylinder maintenance. The latter are ideal when the bottom door cylinders are in the hopper or void spaces.

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