CUTTER SUCTION DREDGER 450

DREDGING

LIST OF STANDARD EQUIPMENT

HULL AND SUPERSTRUCTURE
- The dredger is dismountable in main pontoon, four side pontoons, operating cabin, cutter ladder, gantry and spud poles, which permits easy transportation by road, rail or ship to nearby any location.
- Heavy duty coupling system with hooks at hull bottom and bolt connection on deck level, making disassembly on land or afloat possible in a very short time and an easy way.
- Three separate engine room hatches for optimal maintenance of engines and dredge pump.
- Double ballast on fore and aft and one single in the middle at each side of the dredger.
- Store with large hatch, wooden floor and shelves, and lighting.
- Chequered aluminium floor plates in engine room.
- Removable railing made of stainless steel and stainless steel wire.
- Marine coating system and cathodic protection for inland- and seawater use.

OPERATING CABIN
- Very spacious operating cabin, easily accommodating 2/3 persons. The cabin is ergonomic designed according to the latest insights.
- Standard equipped with air-conditioning and heating.
- Mounted on shock absorbers to minimise vibration and noise levels.
- Constructed of steel and well insulated.
- Two ergonomic designed control panels with in between a dredge master chair.
- Foldable chair.
- Dark tinted double glassed windows all around of which one can be opened, providing excellent view of all essential deck equipment.
- Window wiper at front- and aft window.

DREDGE EQUIPMENT
- High efficiency dredge pump, built up with Ni-hard4 wearing plates and pump casing and Bainitic Nodular impeller.
- The shaft is sealed using a mechanical seal.
- Cutter shaft supported by roller bearings mounted in an oil filled casing.
- The slow running hydraulic cutter motor is well protected in the cutter unit.
- Advanced design cutter with replaceable wear resistant pick points or chisels.
- Straight suction pipe for optimal suction performance and low wearing characteristics.
- Inspection piece with hatch in front of dredge pump.

ENGINE ROOM MACHINERY
- Latest model Caterpillar engines, complying with IMO regulations.
- Closed freshwater cooling system.
- Engines can be started from control panel both in engine room and in operating cabin.
- Dredge pump driven through a gearbox, with electric/hydraulic clutch operated from the operating cabin.
- Engine room is ventilated by two electric driven fans.
- Various auxiliary equipment, such as generator, bilge-, cooling water pumps.

DECK MACHINERY
- Side wire winches operated with proportional constant tension system, guaranteeing a stable cutter process.
- Foldable hoist for changing pump- and spare parts.

LIST OF OPTIONAL EQUIPMENT

GENERAL
- Hull certification for sheltered waters.
- De/increase cutter depth.
- Anchor boom installation.
- Side suction installation including jet water pump.
- Aft suction installation including jet water pump.
- Steel connection for discharge pipeline.
- Jet crane for changing pump- and spare parts.

DREDGING INSTRUMENTATION
- Production calculation, existing of:
  - Velocity meter.
  - Concentration meter.
  - Yield indicator.
  - Electronics revolution counter dredge pump.
  - Dredge Profile Indicator.
  - Positioning/survey systems.

ELECTRIC INSTALLATION
- Engine and the other for the instrumentation and emergency lighting.
- Electric installation for the general lighting, electric pumps, ventilation etc. is fed by the generator.
- The power distribution board is placed in the engine room.
- Communication between operating cabin and engine room is done over a PLC bus system.
- Electric connections between cabin and main pontoon with multi-pin socket for quick (dis)assembly without the possibility of wrong connections.

AUXILIARIES
- Mooring lines, life saving equipment, navigation equipment.
- Set of tools including pickup hook and boatswain’s inventory.
- Start up spare parts.

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**PRINCIPAL DIMENSIONS**

- Length o.a. incl. ladder and spudkeepers: 33.00 m
- Length over pontoons: 20.80 m
- Beam o.a.: 6.95 m
- Depth: 1.80 m
- Draught (100% filled bunkers): approx. 1.15 m
- Air draught (spuds removed/ ladder up): approx. 6.10 m
- Total weight: approx. 115 ton

**TANK CAPACITIES**

- Fuel oil: approx. 2 x 9 m³ (for ± 100 running hours)
- Ballast water (fore and aft): 2 x 6 m³ and 2 x 6 m³
- Hydraulic oil: 1.5 m³

**DECK MACHINERY**

- Ladder winch (1x): 80 kN, 0-15 m/min
- Side wire winches (2x): 80 kN, 0-15 m/min
- Spud hoisting (2x) by hydraulic cylinder, stroke: 1500 mm

**ENGINE INSTALLATION**

- Total installed power: 865 kW
- Dredge pump diesel: Caterpillar 3508B SCAC-IMO Version
- Continuous power rating: 637 kW (A-rating) @ 1600 rpm
- Auxiliary diesel: Caterpillar 3406C DITA JWAC
- Prime power rating: 228 kW (Auxiliary) @ 1800 rpm
- Hydraulic installation: driving cutter, winches and spuds
- Electric installation: 24 Volt DC for controls, emergency lighting, auxiliaries; 230/400 Volt AC for engine room ventilation, lighting and auxiliaries

The DAMEN cutter suction dredger - model 450 - is one of the standard models within a range of well proven, dismountable cutter suction dredgers. There are several options possible to meet any operational requirement.

**CUTTER SUCTION DREDGER 450**

**GENERAL ARRANGEMENT**

**BASIC FUNCTIONS**

- Maintenance dredging
- Capital dredging
- Mining

**STANDARD DESIGN FEATURES**

- Heavy duty robust design
- Scantlings in excess of class regulations
- Spacious ergonomic designed operating cabin
- Well powered, to ensure simultaneous operation of all functions
- Highest quality of installed equipment and components to ensure continuous operation

**CUTTER SUCTION DREDGER 450**

**PRODUCTION CURVES**

Production of in situ cubic meters versus discharge distance for various volumetric concentration for grain size: 0.2 mm

Production of in situ cubic meters versus discharge distance for various grain sizes at concentration of 20%