



CUTTER SUCTION DREDGER 450

DREDGING



DAMEN

This leaflet is a brief summary from the original specification, which can be sent on request

Specifications are subject to modification without notice.

DAMEN DREDGING EQUIPMENT

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LIST OF STANDARD EQUIPMENT

HULL AND SUPERSTRUCTURE

- The dredger is dismantlable in main pontoon, four side pontoons, operating cabin, cutter ladder, gantry and spud poles, which permits easy transportation by road, rail or ship to nearly any location
- Heavy duty coupling system with hooks at hull bottom and bolt connection on deck level, making (dis)assembly 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 bollard 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 stanchions 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 Baititic 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 for engines with box coolers
- 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

- Spud poles which are hoisted by hydraulic cylinders, Operation including slow fall from operating cabin. Slow fall operation is also possible manually, at the spud hoisting cylinders

HYDRAULIC INSTALLATION

- All hydraulic motors and cylinders are operated by two variable axial piston pumps driven by the auxiliary engine. The system includes: stainless steel tank, all required electric operated valves, filters, gauges etc.

ELECTRIC INSTALLATION

- The dredge pump engine is started by its own battery set. The set is charged by the alternator of the dredge pump engine. The other two 24 VDC battery sets are charged by the alternator of the auxiliary engine. One set for starting the aux. engine and the other for the instrumentation and emergency lighting. The 230/400 VAC installation for the general lighting, electric pumps, ventilation etc. is fed by the generator. The generator is driven by the auxiliary engine. 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 impeller hook and boatswain's inventory
- Start up spare parts

LIST OF OPTIONAL EQUIPMENT

GENERAL

- Hull certification for sheltered waters
- De-/increase cutter depth
- Anchor boom installation
- Spud carriage pontoon
- Plain suction installation including jet water pump
- Swivel connection for discharge pipeline
- Jib crane for changing pump- and spare parts

- Anchors
- Day accommodation
- Toilet facility
- Navigation, search and deck lights for working at night
- Valves in dredge pipes:
 - Non-return valve in discharge pipe
 - Hydraulic operated valve in suction/discharge pipe
 - Automatic vacuum relief valve in suction pipe

DREDGING INSTRUMENTATION

- Production calculation, existing of:
 - Velocity meter
 - Concentration meter;
 - Yield indicator
- Electronic revolution counter dredge pump
- Dredge Profile Indicator
- Positioning/survey systems

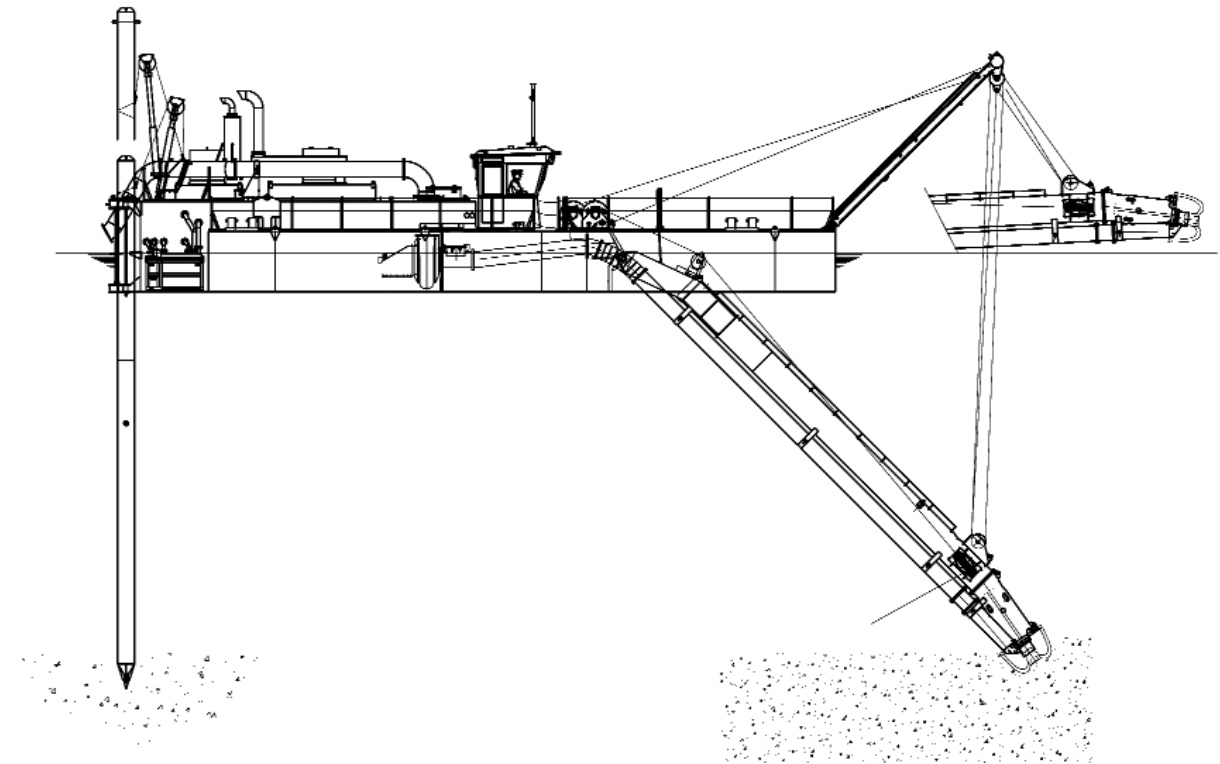
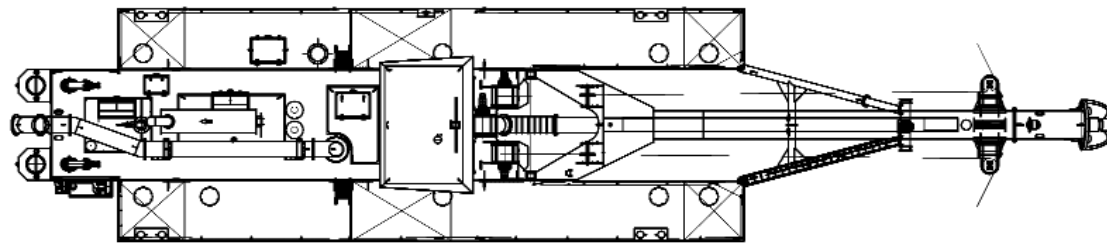
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LIST OF EQUIPMENT

DAMEN

Member of the DAMEN SHIPYARDS GROUP





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.

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

GENERAL ARRANGEMENT

DREDGING FEATURES

Min / max dredging depth	1,5 / 12 m (cutterladder angle of 2,5 / 45°)
Dredging width at 40° swing angle	32 m (at max dredging depth)
Maximum mixture capacity, indicative	3000 m ³ /hr

DREDGE INSTALLATION

Dredge pump type	BP45-1100
Impeller design	high efficiency, double curved, 4 bladed
Impeller diameter / width / spherical passage	1100 / 215 / 200 mm
Diameter suction- and discharge pipe	450 mm
Cutter	5-bladed, diameter 1500 mm
Cutter power	110 kW
Cutter speed	continuously variable from 0-30 rpm
Mooring system	two spud poles and two swing winches

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

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 m ³ (for ± 100 running hours)
Ballast water (fore and aft)	2 x 6 m ³ and 2 x 6 m ³
Hydraulic oil	1,5 m ³

DECK MACHINERY

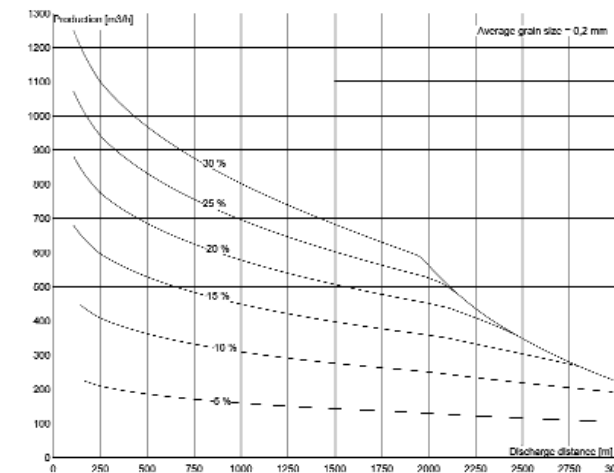
Ladder winch (1x)	80 kN, 0-15 m/min
Side wire winches (2x)	80 kN, 0-15 m/min
Spud hoisting (2x)	by hydraulic cylinder, stroke 1500 mm

PROCESS INSTRUMENTATION

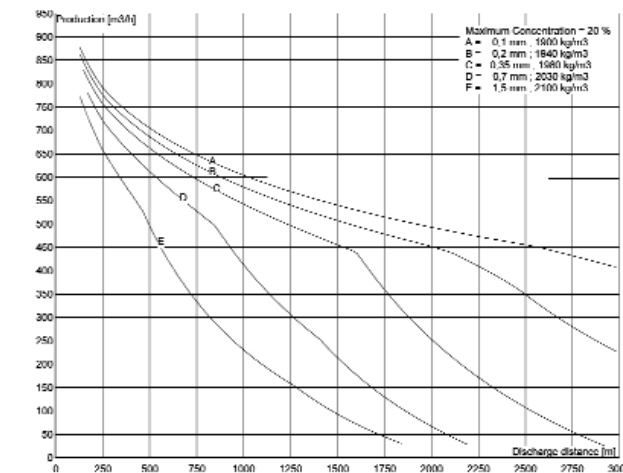
- Electronic vacuum and pressure indicator
- Mechanical dredging depth indicator

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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 grainsizes at concentration of 20%