THE ONE STOP FOR ALL YOUR DREDGING SOLUTIONS

EDITION 2017
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THE DUTCH KNOW DREDGING

For over 400 years the Dutch have kept their feet dry and today’s Dutch water management is a much sought after tool for other countries battling these problems.

There are mainly 2 types of dredging, either coming from sea, or dredging rivers, lakes and ports. At BIG Dredging we focus on the last chapter, rivers, lakes and ports. Decades or sometimes centuries of sediment descent urge countries to rehabilitate the river-beds. Lowering the river-beds makes the river navigable again, and prevents flooding during the rain-season. Our equipment is both flexible in handling and production, offering you a unique combination of know-how and performance.

No situation is ever the same, not in circumstances, nor in possibilities. This makes that our brochure highlights the essentials of our equipment, but your solution will always be of bespoken nature.

BIG Dredging is the specialist in highly efficient dredging tools of the reputed brand Holland Dredge Design, member of the BIG Group of Companies. We produce our own extensive standard range of robust and powerful dredgers, cutter dredgers, submersible dredging pumps, tools and more, carried on stock.
STATE OF THE ART DREDGE DESIGN

BIG Dredging has teamed up with the very best companies for the design and manufacturing of plants, accessories and spare parts for sand and gravel extraction in inland waterways, including all components necessary for the smooth operation of a dredging company.

BIG Dredging markets the worldwide known brand Holland Dredge Design (HDD). BIG Dredging thinks ahead! This is more than a slogan. Continuous innovation in the fields of engineering and fabrication guarantees that our customers receive systems which have lower investment and operation costs, longer life of the components and better performances. The starting point is a well-balanced mixture of design, engineering and production technology, according to the latest state of technique and traditional workmanship. The international quality management standards play an important role. The delivery of high-quality products at favorable costs will always be a main goal of BIG Dredging.

BIG Dredging is proud to offer high flexibility regarding the customer’s requirements. Dredging equipment and systems for almost all thinkable situations which may occur during gravel and sand extraction in inland waterways can be supplied. If standard solutions do not fulfill the needs, BIG Dredging will design systems and components especially for the respective demand. Each and every product delivered by BIG Dredging represents a piece made of bespoken nature.

Long life, high reliability, low maintenance costs, high efficiency – these have always been the properties of the HDD pumps. This standard for sand and gravel pumps is one that BIG Dredging considers of most importance. The design of the HDD pumps shows state of art engineering and offers the maximum and highs in efficiency and reliability. Wear parts such as impellers or housings can be ex-changed without much effort, keeping operating costs low, shutdown periods short.

The pump range of the HDD pumps which BIG Dredging offers comprises high and low pressure pumps for sand and gravel with quantity capacities of 450 up to 11.000 m³/h. The data of the different pump sizes show intersections. This means there will always be a choice of pumps suitable for each situation. Both pump types are available in underwater or surface design. The underwater pump is available with an electric or hydraulic drive. All pumps are subjected to thorough function tests prior to delivery, so that the required pump performances can be guaranteed.
AMPHIBIOUS EXCAVATORS (SWAMP BUGGIES)

An amphibious excavator / swamp buggy is a highly unique machine designed to work in marshy, swampy area and soft terrain, and it can also float on water as an added safety feature.

Applications:
- Maintenance and cleaning of waterways, lakes, shorelines, ponds and more.
- Deepening of waterways.
- Flood protection and flood maintenance works.
- Landscape building and protection
- Dredging with a submersible dredging pump.
- Swamp and wetland construction.

Features:
- Multi-synchronous hydraulic motor drive system, mounted in both front and rear for better dispersion of forces.
- Heavy duty track chain system.
- Three track chains, allowing easy leaving the area for track repair.
- HDPE track shoes, largely less sensitive for unseen obstacles.
- Hardened rollers and bushings for long life operation.
- Container size design for easy and cost efficient transportation.
- Additional side pontoons with spud legs for extra stability.
- Thrusters for extra power driving through the water
- Extra fuel tank

The amphibious undercarriage can be used with different type of brands and models.
Range of models:
- 10 Tons amphibious excavators
- 20 Tons amphibious excavators
- 30 Tons amphibious excavators
- 40 Tons amphibious excavators
HDD SUBMERSIBLE DREDGE PUMPS

OVERVIEW

The HDD SUBMERSIBLE DREDGE PUMP is a high efficient and modular heavy-duty submersible dredge pump unit. This pump range has several dredge tools and connectors to adapt every situation and environment.

<table>
<thead>
<tr>
<th>Dredge pump range:</th>
<th>SDP 150</th>
<th>SDP 200</th>
<th>SDP 250</th>
<th>SDP 300</th>
<th>SDP 350</th>
<th>SDP 400</th>
<th>SDP 450</th>
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<tbody>
<tr>
<td>Capacity max.* [m³/hr]</td>
<td>450</td>
<td>850</td>
<td>1250</td>
<td>1900</td>
<td>2300</td>
<td>3200</td>
<td>4500</td>
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<tr>
<td>Pump shaft at speed* [rpm]</td>
<td>1350</td>
<td>950</td>
<td>850</td>
<td>750</td>
<td>730</td>
<td>630</td>
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<tr>
<td>Max. power at shaft* [kW]</td>
<td>70</td>
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<td>185</td>
<td>320</td>
<td>330</td>
<td>480</td>
<td>680</td>
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<td>250</td>
<td>300</td>
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<td>130</td>
<td>150</td>
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<td>Impeller size [mm]</td>
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<td>600</td>
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<td>790</td>
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<td>Weight (Pump unit) [kg]</td>
<td>610</td>
<td>1280</td>
<td>2100</td>
<td>3200</td>
<td>3650</td>
<td>5800</td>
<td>8800</td>
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</table>

*at 5 bar
APPLIED APPLICATIONS AND AREAS OF OPERATION

PUMP UNIT:
• Capacity range from 450 to 4500 m³/hr
• High efficiency:
  - adjustable impeller offset to the front plate
  - double curved impeller blades
  - compensation blades outside the impeller and
  - helix delivery pipe output
• Special wear parts 62 HRC (exchangeable)
• Hydraulically or electrically driven

DREDGE TOOLS POSSIBLE:
• Water jet for sand, gravel and slurry
• Cutter head in sand, gravel, clay and chalk
• Flat head for loose material like sand, gravel, etc.
• Auger head for sand gravel and slurry

CONNECTABLE WITH AN:
• Excavator connector or quick coupler
• Steel cable on a winch (crane usage)
• Pump ladder
• Hydraulic power pack

OPERATIONAL AREAS:
• Sand & Gravel mining
• Cleaning harbors, rivers, dam
• Hopper barges

WE CAN PROVIDE YOU:
• Dredge advice and support
• Training
• Aftersales
• Spare parts
• Maintenance
• Automatic dredge drive
• De-watering equipment
• Other dredge equipment & components

OTHER BENEFITS:
• Easy maintenance
• Cost effective for quick action
• Easy to operate
• Flexible
• Compact
• Large spherical passage

PRODUCTION RESULTS MEDIUM SAND 230µ

<table>
<thead>
<tr>
<th>Discharge pipe length (m)</th>
<th>SDP 150</th>
<th>SDP 200</th>
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m³/hr (Solid)
CROSS SECTION OF THE SUBMERGED DREDGE PUMPS

Sand production head configuration

Hydraulic cutter unit configuration

OVERVIEW SUBMERSIBLE DREDGE PUMPS
WEED HARVESTER

At BIG Dredging we have a large experience in addressing the rehabilitation of riverbeds.

Step one is the elimination of waterplants which pollute the available water. Mainly the waterhyacint covers large areas of used to be open waters. Not only do they extract oxygen from the water, killing the fish. They also house the mosquitoes which spread malaria. By taking away this habitat at least temporarily the curse of malaria will be reduced largely, thus reducing the cost for treatments.

The Weed Harvester has been developed in such way that the roots of the plants get cut 50 cm below the water level. Not for mangrove or trees, water plants only. Via the transport belt it gets fed into a shredder, releasing the bits and pieces into a barge following the harvester on its tour through the plants. The remainders can be used for biogas, or directly as natural fertilizer.

After the taking out of the plants, the next step is dredging the riverbed, as otherwise the roots have not been completely eliminated, meaning the operation needs to be repeated on a regular base.

The weed harvester is amphibious, meaning it drives itself in and out of the water. In the water it is self-propelled, equipped with sufficient storage for diesel allowing hours of smooth operation.
DREDGERS FOR ALL SITUATIONS

The conditions for extracting sand and gravel depend on the location, extraction depth, soil character, water volume and the situation regarding existing buildings or ecological and environmental conditions. For each situation HDD Dredging has developed a program of suction dredgers, cutter suction dredgers, air-lift dredgers, booster stations and soil pressure systems, designed for modular construction. This modular design for the large components, such as pontoons and power supply, not only generates flexibility, but also minimizes the costs for the user.

Within this modular system different configurations can be realized. Just like the big stationary systems, the small mobile suction dredgers can be mounted or dismounted within no more than 10 working hours.

All HDD dredgers are equipped with computer control in keeping with the latest technological developments for positioning, handling and extraction control. An optional satellite-supported dGPS navigation system can additionally be installed for the purpose of exact and reproducible positioning.

As the situation demands, there is a choice between three different pump drives:
- Direct diesel drive of the dredging pump
- Diesel/electric drive, all pumps powered by one diesel generator on board
- Fully electric drive with energy supply from the shore

The fully electric driven system complies with the strictest environmental standards with regard to sound insulation, emissions and water pollution. The energy for stationary suction dredgers can be supplied with the aid of the energy net ashore. The energy supply for mobile dredgers can be effected by a generator located in a container ashore which is sound insulated.

All electric dredgers are equipped with frequency control. Thus it is possible to power the pumps at constant speed using a generator or the energy net, whereby the speed of single pumps can vary.

On the next page you can find the characteristics.
<table>
<thead>
<tr>
<th>Dredger range:</th>
<th>DP 150</th>
<th>DP 200</th>
<th>DP 250</th>
<th>DP 300</th>
<th>DP 350</th>
<th>DP 400</th>
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<td>2450</td>
<td>3200</td>
<td>4500</td>
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<td>9000</td>
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<td>Work pressure max.</td>
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<td>330</td>
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<td>Impeller size</td>
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<td>400</td>
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<td>930</td>
<td>930</td>
<td>1170</td>
<td>1410</td>
<td>1640</td>
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</table>
PRODUCTION INSTRUMENTATION
• Booster station
• Water jet pump

PROCESS INSTRUMENTATION
• DGPS system
• Dredge drive

POWER PACK
• Diesel driven hydraulic power pack
• Generator set

PIPES AND HOSES
• Full rubber discharge hoses
• Steel / HDPE discharge pipe line
• Floaters
• Hydraulic hoses
• Jet-water hoses

WORK BOATS
• Crew vessels
• Mono hull type work boat
SELECTION CRITERIA FOR CUSTOMIZED DREDGERS

MATERIAL:
Max production of solids : m³/h
Soil under water : Sand/Clay/Gravel/Rock
D₅₀ : mm
Hardness of the bottom : Pa

DREDGE CIRCUMSTANCES:
Environment to dredge in : Harbour/Lake/Delta/River
Max discharge length (L) : m
Max suction depth : m
Max height discharge above water (H) : m
Cutter or jetsystem
   If cutter: Spuds : Yes/No
   Spudcarrier : Yes/No
   Anchorbooms : Yes/No
   Swifel : Yes/No
Power supply : Diesel/Electric

OPTIONS:
dGPS : Yes/No
Dredge Control : Yes/No
Production measurement : Yes/No
Cabin A/C : Yes/No
Toilet : Yes/No
Kitchen : Yes/No
Other options :

Additional information for filling the form :
Explanation Length and Height of delivery pipe
BIG DREDGING

THE ONE STOP FOR ALL YOUR DREDGING SOLUTIONS