

Cutter Suction Dredgers

DAMEN

Tackling your challenges

**Decades of dredging and shipbuilding knowledge have come together in a product series:
Damen Cutter Suction Dredgers (CSDs). These dredgers offer a reliable operation at the lowest possible cost per cubic metre of dredged material - because for us that's what it's all about.**

It's been our design strategy from the start and what drives the continuous development of our products.

It's what motivates the repair, maintenance and training services we provide.

It's what motivates us to always offer you the best solution for your challenges.

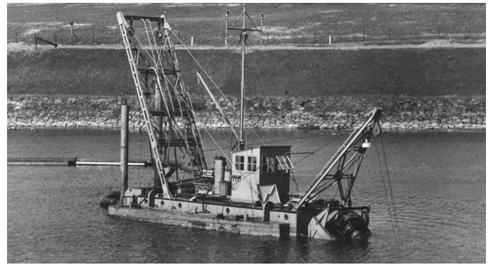
DREDGE KNOWLEDGE CENTRE

Damen Dredging Equipment

Damen Dredging Equipment is the dredging knowledge centre within the Damen Shipyards Group.
The yard specialises in the design, manufacture, and supply of highly efficient dredging tools.
Our newbuild yard is fully equipped for the complete dredge building process, from research & development and design through manufacturing and equipment testing along our own quay.

In addition to complete dredgers, Damen offers a wide range of dredging equipment. For all our equipment we follow the same approach: a robust construction of a proven design, reliable in operation. The excellent performance of the dredging solutions we deliver offers our customers a competitive edge.

A piece of history
Picture of the *Benjamin*, in 1950. This was one of the first cutter suction dredgers to be built in Nijkerk.







SUSTAINABILITY

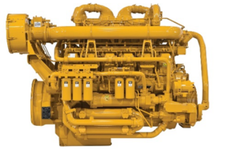
Reshape the world with minimal impact

Damen is committed to the continuous improvement of the safety, health and welfare of all people working whithin our sphere of influence. We are aware that the products we make have the potential to impact the environment.

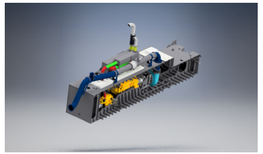
Therefore, we strive towards optimised working practices to ensure this is minimised. We also aim to deliver products with a long lifespan and high quality to enable the sustainability of our clients' business models.

SUSTAINABILITY

A selection of our initiatives



Engines
Latest engines according to IMO regulations: fuel efficient and minimum NOx and CO_2 emissions.



Installations
Our dredgers are prepared for the installation of a selective catalytic reduction system (SCR) meeting IMO Tier III requirements.



Equipment
The use of grease is controlled and minimised. For example, the sealing of the dredge pump is done via a mechanical sealing arrangement.



SAFETY AT WORK

Safety is always our first priority

The well-being of the people working for us and with us is paramount – it comes before all other objectives. Being a family-owned company, we are committed to achieving an incident-free workplace. Every day. Everywhere.

We comply with and, where practical, exceed our legal duties concerning health and safety. We maintain effective health and safety management plans – these are crucial in preventing injury and ill health.

SAFETY ESSENTIALS

Safe working environment



Operator comfort
The control cabin is well protected from noise. It is mounted on vibration dampers and features double glazing and insulated panelling. To create the optimal working environment, the cabin is equipped with a heating and air-conditioning system and windows are tinted to protect against solar glare.



Safe density measurement
Damen uses a proven, optional system to measure mixture density with a non-radioactive sensor. This meter is combined with a velocity meter, the meters provides very accurate information about the vessel's performance.



Protective pump cover
Damen has developed a unique dredge pump cover - the patented Dynacover. Made of strong, light Dyneema fibres, the Dynacover can be zipped effortlessly around any pump to provide protection.

A proven product

Damen has delivered over 300 CSDs worldwide. This success has made our dredgers an industry standard.

More importantly, it gives you confidence in their performance capabilities in a wide range of operational and environmental conditions, ranging from arctic to desert climates.











DESIGNED FOR UPTIME

A product that lasts

We know that minimising downtime and maintenance costs is essential for your business. Therefore, we have designed a CSD series that is robust on all fronts, providing you with a product that lasts and offers a high resale value.

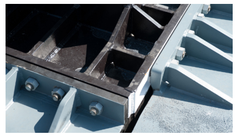
Furthermore, easy maintenance and the global availability of essential wear parts contribute to one of the lowest production downtime ratios in the industry.



Robust by design
We never compromise on strength - as demonstrated by this A-frame with full penetration welds.



Safe access
Inspection hatches have been placed to provide easy access for servicing in areas where access would otherwise be difficult.



Simple, smart and strong
The coupling system of the CSD pontoons is simple, smart and strong and makes use of generic bolts for easy handling. Pontoons have plate thicknesses that exceed class requirements.



Practical maintenance
The teeth of the cutter head can easily be replaced.



Details that matter
All essential components, such as the dredge pump and gearbox pictured here, are equipped with hoisting eyes for easy and quick maintenance.

Whatever the job

The CSD is suitable for the maintenance of ports, channels and water reservoirs, sand winning for building projects and land reclamation, as well as the removal of polluted soils.



Capital dredging
Civil works such as the creation of new harbour basins, canals and land by means of dredging in virgin soil.



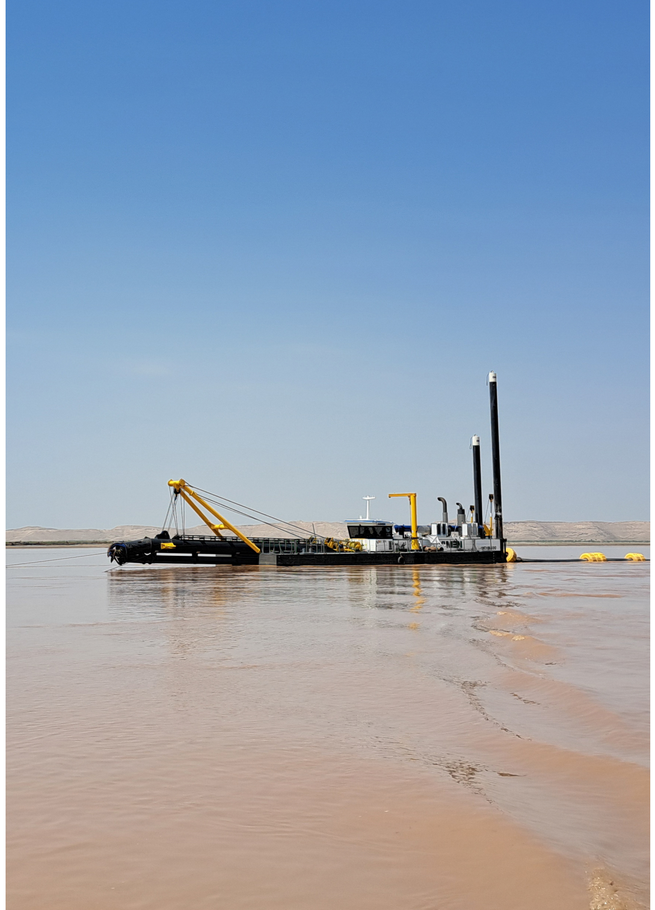
Environmental dredging
Removing polluted sediments from rivers, harbour basins etc. that may cause a hazard to public health and ecosystems.



Aggregate dredging
Dredging in order to extract minerals with an economic value from underwater deposits.



Maintenance dredging
The periodic removal of shoals or sediments from existing navigational channels, rivers, ports, lakes, hydro-power reservoirs etc. in order to maintain a safe water depth for navigation, construction, or operational purposes.















Wherever in the world

The smart dismountable design allows each dredger to be reassembled in just a few days. All electrical connections feature sockets and all bolt connections are easily reachable.

KEY TO SUCCESS

Modular approach

Building standard dredgers in series gives our clients fast access to proven, reliable technology. Our standard designs can be tailored to individual client needs via modular construction, ensuring you of the dredger you need, whatever challenges you face. Standard designs can be equipped with various options to suit specific tasks.



Benefits of modular building

- Fast response to customer requests
- Competitive pricing
- Tested and proven technology
- Continuous product development
- Interchangeability of ships, crews, spares
- Lower maintenance costs
- Guaranteed performance

Damen standard

Engineering & standardisation → Production standard dredger → Dredger on stock

Standard dredgers built on stock

Client request



Offer → Order → Engineering → Installation of options → Trials & deliveries

Conventional shipbuilding

Offer → Order → Engineering → Start production → Trials & deliveries

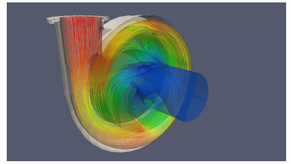


DAMEN'S BACKBONE

Continuous Research, Development & Innovation

The Damen CSDs benefit from thorough R&D from their initial design, throughout their entire lifecycle. Our team is continuously improving our dredgers, making them more cost-efficient, maintenance-friendly and environmentally sustainable.

Damen's close cooperation with world-renowned research institutes like Delft University of Technology (TU Delft), Maritime Research Institute Netherlands (MARIN) and the Netherlands Organisation of Applied Scientific Research (TNO), as well as other reputable partners and leading maritime and dredging companies, contributes to this product development.



Dredge pump design

Damen designs its own extensive range of dredge pumps.The range includes low, medium and high pressure dredge pumps focusing on maximum efficiency and minimal wear.



Remote acces by damen digital

All Damen dredgers are equipped with a Damen Digital remote access connection. In this way Damen and you are able to view dredge data and perform trouble-shooting from a distance, saving costs and operation time.



Meet Sandy

Dredgefinder.com is an online tool to aid contractors in choosing the right CSD and additional equipment for tender submissions. The results provide valuable production information and give insight into the potential efficiency gain of selected options.

TU Delft · MARIN · TNO innovation for life



Dedicated from design to delivery

Damen Cutter Suction Dredgers are built to the highest standards, ensuring a lifetime of minimal maintenance. This is partially due to our selection of the best components, and partially to our optimised construction process, undertaken at our dedicated production location in the Netherlands.



A dredging institute

Here, the complete design, operational support and construction is carried out. Performing the comprehensive process at one location guarantees short lines of communication. This results in continuous product development and a smooth, efficient building process. The location is modern, clean and logistically well-situated.



Only the best partners

Damen selects the best industrial partners for the supply of dredger subsystems. The innovative maritime cluster which surrounds Damen ensures constant improvements and innovations.

The Damen Cutter Suction Dredger design in detail

The CSD features an efficient and robust design, combining high-quality production with easy assembly and low maintenance.



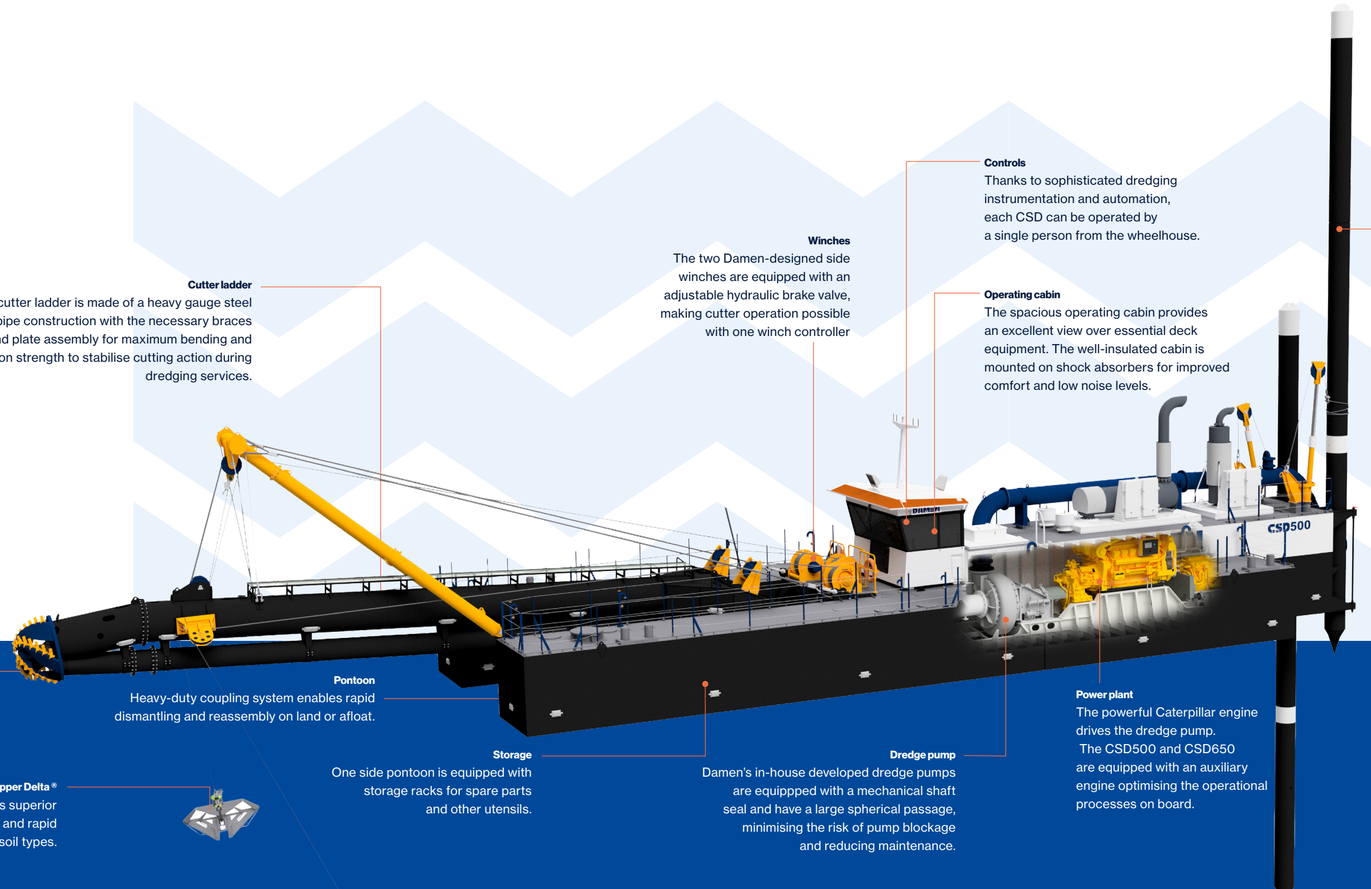
Cutter ladder
The cutter ladder is made of a heavy gauge steel pipe construction with the necessary braces and plate assembly for maximum bending and torsion strength to stabilise cutting action during dredging services.

Winches
The two Damen-designed side winches are equipped with an adjustable hydraulic brake valve, making cutter operation possible with one winch controller

Controls
Thanks to sophisticated dredging instrumentation and automation, each CSD can be operated by a single person from the wheelhouse.

Operating cabin
The spacious operating cabin provides an excellent view over essential deck equipment. The well-insulated cabin is mounted on shock absorbers for improved comfort and low noise levels.

Spuds
Spuds are hoisted and lowered by hydraulic cylinders controlled from the operating cabin. Manual lowering is also possible..



Cutter head
All dredgers are equipped with a powerful cutter, the teeth of which can be easily replaced.

Pontoon
Heavy-duty coupling system enables rapid dismantling and reassembly on land or afloat.

Storage
One side pontoon is equipped with storage racks for spare parts and other utensils.

Dredge pump
Damen's in-house developed dredge pumps are equippped with a mechanical shaft seal and have a large spherical passage, minimising the risk of pump blockage and reducing maintenance.

Power plant
The powerful Caterpillar engine drives the dredge pump. The CSD500 and CSD650 are equipped with an auxiliary engine optimising the operational processes on board.

Flipper Delta ®
A Flipper Delta anchor provides superior holding power with its easy handling and rapid penetration in different soil types.

The Damen CSD standard series

The Damen standard range consists of five types of dredger. The standard design and continuous building process result in short delivery times and competitive pricing.

All CSDs are completely assembled and fully tested at the yard before delivery. With this, they are immediately ready for operation on arrival at site.

CSD350

Principal dimensions	
Length o.a. (incl. ladder & spudkeepers)	26 m
Length over pontoons	16.5 m
Beam o.a.	6 m
Depth	1.5 m
Draught (bunkers full, approx)	0.8 m
Air draught (spuds removed, ladder up)	4.7 m
Total weight	55 t
Dredging features	
Min/max dredging depth (ladder angle 3°/45°)	1/9 m
Dredging width (40° swing angle/ max depth)	27 m
Maximum mixture capacity	2,000 m^3/h



Dredging installation	
Damen dredge pump type	BP3530MD
Suction/discharge internal pipe diameter	350 mm
Cutter power	55 kW
Engine installation	
Total installed power	447 kW
Dredge pump diesel	Caterpillar C18
Continuous power rating (A-rating)	447 kW
Total fuel capacity (approx 100 running hrs)	8.4 m^3
Deck machinery	
Ladder hoisting winch	50 kN
	0-15 m/min
Side wire winches (2x)	50 kN
	0-15 m/min
Spud hoisting (2x Hydraulic cylinder)	Stroke 1.2 m

CSD500

Principal dimensions	
Length o.a. (incl. ladder & spudkeepers)	38.5 m
Length over pontoons	25.5 m
Beam o.a.	7.95 m
Depth	2 m
Draught (bunkers full, approx)	1.05 m
Air draught (spuds removed, ladder up)	6.4 m
Total weight	140 t
Dredging features	
Min/max dredging depth (ladder angle 3°/45°)	2.5/14 m
Dredging width (40° swing angle/ max depth)	40 m
Maximum mixture capacity	4,000 m^3/h



Dredging installation	
Damen dredge pump type	BP5045
Suction/discharge internal pipe diameter	550/500 mm
Cutter power	180 kW
Engine installation	
Total installed power	1,293 kW
Dredge pump diesel	Caterpillar 3512C
Continuous power rating (A-rating)	954 kW
Total fuel capacity (approx 100 running hrs)	21.7 m^3
Deck machinery	
Ladder hoisting winch	120 kN
	0-15 m/min
Side wire winches (2x)	120 kN
	0-15 m/min
Spud hoisting (2x Hydraulic cylinder)	Stroke 1.5 m

DCSD500

Principal dimensions	
Length o.a. (incl. ladder & spudkeepers)	46 m
Length over pontoons	28.5 m
Beam o.a.	9 m
Depth	2 m
Draught (bunkers full, approx)	1.2 m
Air draught (spuds removed, ladder up)	6.4 m
Total weight	220 t
Dredging features	
Min/max dredging depth (ladder angle 3°/45°)	5/25 m
Dredging width (40° swing angle/ max depth)	44 m
Maximum mixture capacity	4,000 m^3/h



Dredging installation	
Damen dredge pump type	BP5045
Suction/discharge internal pipe diameter	550/500 mm
Cutter power	110 kW
Engine installation	
Total installed power	1,421 kW
Dredge pump diesel	Caterpillar 3512C
Continuous power rating (A-rating)	954 kW
Total fuel capacity (approx 100 running hrs)	20 m^3
Deck machinery	
Ladder hoisting winch	120 kN
	0-15 m/min
Side wire winches (2x)	80 kN
	0-15 m/min
Spud hoisting (2x Hydraulic cylinder)	Stroke 1.5 m

CSD650 - 18 m

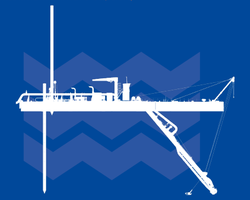
Principal dimensions	
Length o.a. (incl. ladder & spudkeepers)	61.2 m
Length over pontoons	49.3 m
Beam o.a.	10.5 m
Depth	2.78 m
Draught (bunkers full, approx)	1.65 m
Air draught (spuds removed, ladder up)	8.4 m
Total weight	535 t
Dredging features	
Min/max dredging depth (ladder angle 3°/45°)	3/18 m
Dredging width (40° swing angle/ max depth)	63 m
Maximum mixture capacity	7,000 m^3/h



Dredging installation	
Damen dredge pump type	BP6560MD
Suction/discharge internal pipe diameter	650 mm
Cutter power	700 kW
Engine installation	
Total installed power	2,960 kW
Dredge pump diesel	Caterpillar 3516C HD
Continuous power rating (A-rating)	1,825 kW
Total fuel capacity (approx 100 running hrs)	86.1 m^3
Deck machinery	
Ladder hoisting winch	270 kN
	0-15 m/min
Side wire winches (2x)	270 kN
	0-20 m/min
Spud hoisting (2x Hydraulic cylinder)	Stroke 2 m

CSD650 - 25 m

Principal dimensions	
Length o.a. (incl. ladder & spudkeepers)	70 m
Length over pontoons	58.8 m
Beam o.a.	10.5 m
Depth	2.78 m
Draught (bunkers full, approx)	1.65 m
Air draught (spuds removed, ladder up)	8.4 m
Total weight	645 t
Dredging features	
Min/max dredging depth (ladder angle 3°/45°)	5/25 m
Dredging width (40° swing angle/ max depth)	71 m
Maximum mixture capacity	7,000 m^3/h



Dredging installation	
Damen dredge pump type	BP6560LD / BP6560MD
Suction/discharge internal pipe diameter	650 mm
Cutter power	700 kW
Engine installation	
Total installed power	3,966 kW
Dredge pump diesel	Caterpillar C32 gen set & Caterpillar HD 3516C
Continuous power rating (A-rating)	1,080 kVA and 1,825 kW
Total fuel capacity (approx 100 running hrs)	87.6 m^3
Deck machinery	
Ladder hoisting winch	270 kN
	0-15 m/min
Side wire winches (2x)	270 kN
	0-15 m/min
Spud hoisting (2x Hydraulic cylinder)	Stroke 2 m

OPTIONS

Assemble your perfect dredger

The standard CSD can be customised effortlessly with a large number of available options. As these options are ready prepared, they can be installed quickly, even after delivery.

Legend
(incl.) Included in the standard design of the vessel
● Standard option (short delivery time, CSD is prepared for this option)
◗ Non-standard option (longer delivery time, CSD is not prepared for this option)
✖ Custom (discuss the details with your sales representative)
* In combination with a submersible dredge pump
** In combination with increase of cutter depth

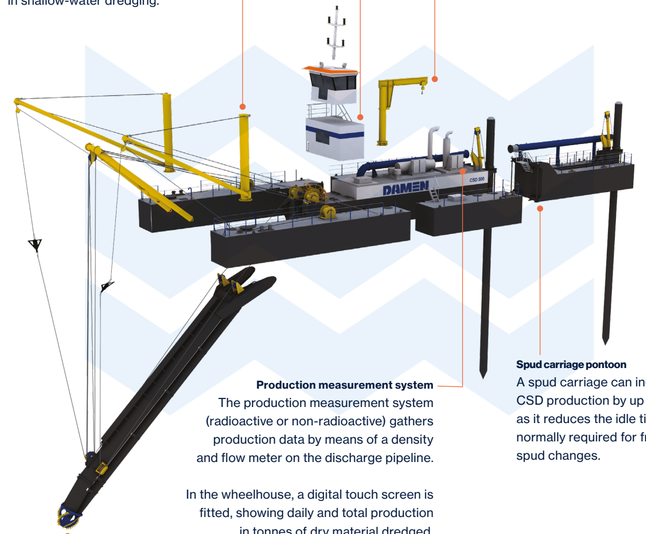
Besides these standard options, our dredgers can be customised in accordance with almost any specific wishes.

	CSD 350	CSD 500	DCSD 500	CSD 650
Class certificate By international standard (Bureau Veritas)	✖	●	✖	incl.
Day accommodation Galley, toilet, seating area, air-conditioning	✖	●	●	incl.
Heavy-duty cutter Better performance in hard soil	✖	●	●	incl.
Wedge piece For shallow water dredging	●	●	●	●
Increase of cutter depth Extended ladder for deeper dredging	●	●	◗	●**
Submersible dredge pump installation Additional dredge pump to dredge at max. depth	✖	◗	✖	●**
Dynacover Protection layer around the dredge pump	●	●	✖	●
Anchor boom installation Autonomous anchor handling	●	●	●	●
Spud carriage pontoon Increase dredge efficiency	●	●	●	incl.
Deck crane For easy maintenance	◗	●	●	●
Swivel hose Rigid connection to discharge pipeline	●	●	●	●
Navigation package Enhanced navigation capabilities	●	●	●	●
Air conditioning cabin For a comfortable working environment	●	incl.	incl.	incl.
Production measurement Optimal insight into the dredger's production	●	●	●	●
Positioning visualisation system Satellite positioning of the dredger	●	●	●	●

Day accommodation
The day accommodation offers the crew a practical onboard space for breaks, briefings and daily operational support.

Deck crane
For easy maintenance of the dredge pumps and general use.

Anchor boom
With an anchor boom installation, anchors can be repositioned without a Multi Cat, offering a clear advantage in shallow-water dredging.



Production measurement system
The production measurement system (radioactive or non-radioactive) gathers production data by means of a density and flow meter on the discharge pipeline.

In the wheelhouse, a digital touch screen is fitted, showing daily and total production in tonnes of dry material dredged.

Spud carriage pontoon
A spud carriage can increase CSD production by up to 20%, as it reduces the idle time normally required for frequent spud changes.

Heavy-duty cutter
Less downtime and better performance in hard soils.

Dynacover
To increase the safety of the dredger, an extra protection layer around the dredge pump can be installed. The cover, called DynaCover, ensures that the wear parts can be safely worn down to a maximum. The Dynacover can be retrofitted on existing dredge pumps.



Positioning visualisation system
A positioning visualisation system will greatly increase the efficiency of the dredger. It shows the position of the cutter head and information on the area of operation within 1 metre accuracy. This can be enhanced to 10 centimetres by adding the RTK shore-based station.

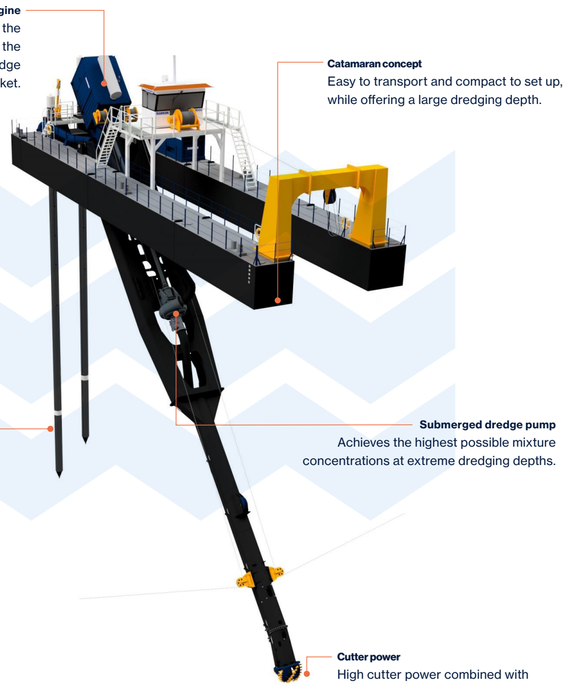


WHERE POWER MEETS DEPTH

Deep Cutter Suction Dredger 500

With sand being dredged at ever greater depths, Damen has added a Deep Cutter Suction Dredger 500 to its portfolio. This compact DCSD has been designed to operate at dredging depths that have previously been possible to reach only with larger dredgers.

The fully dismountable DCSD500 features a catamaran configuration, with buoyancy provided by pontoons on both sides of the vessel. The centrally mounted suction ladder is equipped with a submerged dredge pump, directly driven by a diesel engine mounted on this ladder. The dredger can be operated by one person from the elevated control cabin, offering a clear overview of the dredging operation.



Diesel engine
Mounted directly on the ladder, the diesel engine provides one of the most efficient submerged dredge pump drives on the market.

Catamaran concept
Easy to transport and compact to set up, while offering a large dredging depth.

Positioning with spuds
Ensures precise dredging and optimal cutter force distribution.

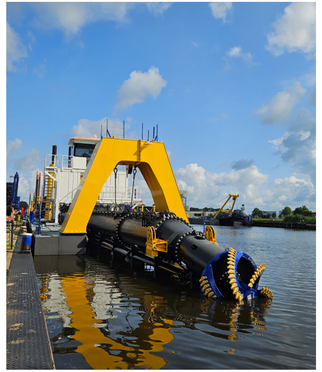
Submerged dredge pump
Achieves the highest possible mixture concentrations at extreme dredging depths.

Cutter power
High cutter power combined with increased dredging depth













THE TOTAL PACKAGE

Auxiliary equipment

Damen can ship a complete dredge package to your job site including the pipeline and matching booster station.

Booster stations

Booster stations enable you to extend your discharge distance. They can be remotely controlled and monitored from the CSD.

The standard booster station can be equipped with extra insulation measures to meet noise restrictions specified for environmentally sensitive or urban areas.

Standard booster stations are fitted with:

- Dredge pump identical to the CSD for easy maintenance
- Radiator cooled diesel engine with constant power over large speed range
- Standard container-sized frame and casing for practical hoisting and transport
- Compact casing provided with large doors and hatches for servicing



Pipeline systems

Damen offers complete discharge pipeline systems of steel or HDPE, including flexibles and floats, for the transportation of the dredged mixture.





Multi Cats



The Multi Cat is the ideal support vessel for dredging operations, providing reliable assistance wherever it is needed. Moreover, it can be equipped with a wide range of dredging tools, including a DOP pump, water injection dredging installation or plough for seabed levelling.

The Multi Cat was invented by Damen as the perfect dredge assistant.

It can perform the following operations:

- Anchor handling and repositioning
- Towing duties of dredger, pipeline, etc.
- Changing cutter teeth
- Connecting pipelines
- Transport of crew, parts, fuel, etc.

With its spacious working deck and a 360˚ view from the wheelhouse, the Multi Cat ensures safe handling and high levels of crew comfort.

Quality is in the details

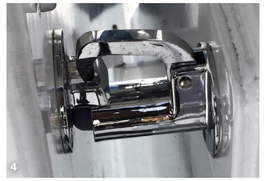
Years of product development have resulted in quality in every detail, no matter how small. Combined with the use of high-standard materials, this ensures a dredger you can rely on.

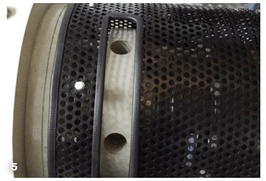
1 The pontoons have thicker steel plating where larger stresses are likely to occur, as pictured here at the ladder hinge area at the front of the main pontoon. Plate sides are always bevelled to ensure seamless transition of stress throughout the structure.
2 All abrasive hose parts are sealed to protect them from corrosion.
3 Underwater parts of the dredger are covered in anodes to prevent corrosion.
4 All doors and hatches have fastening pins for personnel convenience and safety.
5 Safety in the details: Rotating parts of the drive train are safely kept away by steel grating with soft rubber edges for personnel safety. The opening in the grating enables manual turning of the dredge pump impeller during maintenance.
6 The air conditioning is mounted on rubber pieces to reduce vibration in the wheelhouse.
7 The spud keepers are equipped with hinged 'doors' on both sides to enable horizontal removal of spuds from the CSD for convenient maintenance.
8 The pump foundation has been designed to enable the pump to be placed as low in the CSD as possible to ensure the best possible suction performance.
9 Extra attention has gone into the structural design and positioning of hoisting eyes, which are fitted with extra thick steel rings and full penetration welding to ensure reliable hoisting of the whole dredger from four points only.


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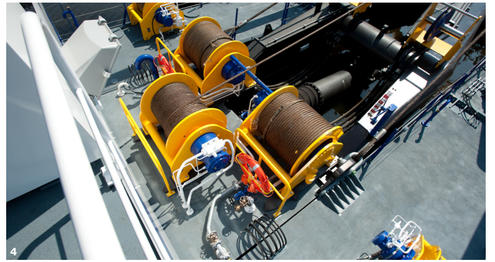

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1 The spuds are made of heavy gauge pipe and are lifted by steel wires and single acting hydraulic cylinders. The spud keepers are designed so that the spuds can be lifted up to the bottom level of the CSD and can be hinged for easy removal.

2 All functions are well-balanced, ensuring optimal performance.

3 Transitions between pontoons are bridged with flexible hoses.

4 The CSD is equipped with extra strong side wire winches to ensure high production in hard or coarse material or when operating in strong current.

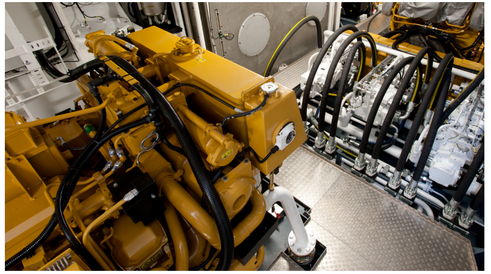


ONE. BIG. POWERHOUSE.

Engine room

The engine room naturally requires regular inspection. Damen's larger CSDs feature spacious engine rooms with wide walkways and ample headroom, ensuring optimal accessibility.

All CSDs are driven by well-powered, modern, computer-controlled Caterpillar diesel engines with low fuel consumption and low emissions, allowing all on-board functions to operate simultaneously.
Like Damen, Caterpillar stands for high performance, quality and a worldwide support network.



A dual act
The CSD500 is equipped with two engines, and the CSD650 with three. A main engine dedicated to the dredge pump and smaller auxiliary engines to power the electric and hydraulic system. This has the following advantages:

- The use of hydraulics does not influence the power available for the dredge pump and makes the dredging process more stable and efficient
- During idle time/maintenance hours the main engine can be shut down as the necessary electric and hydraulic power is delivered by the smaller auxiliary engine, resulting in less fuel consumption



Box coolers outside
Except for the CSD650, all CSD engines and gearboxes are freshwater-cooled by box coolers. Positioned in a protected location on the starboard aft side of the main pontoon, they remain easily accessible for cleaning.



Condense filters hydraulic tank
The separate stainless steel hydraulic tank is equipped with silica gel deaerator filters to prevent condensed water contaminating the hydraulic system.

THINK GLOBAL, ACT LOCAL

Damen Technical Cooperation

Damen can assist customers in building Damen vessels locally via Damen Technical Cooperation (DTC).

This highly flexible option results in a valuable transfer of technology and enables owners to enjoy Damen quality combined with the convenience of local production.

Since DTC was established, over 1,500 vessels have been produced locally in more than 60 countries worldwide. Damen can deliver everything from the licence and vessel design to a full material package and, if necessary, turnkey solutions based on client requirements. DTC's scope covers the entire Damen portfolio.

Proven design, proven technology, built at your local yard.

Design & Licences
- Basic and/or detailed designs provided
- License/royalty for multiple series
- Proven design

Material packages
- Renowned suppliers
- Materials on stock
- Advanced logistics

Building assistance
- Assistance on-site
- Enhance shipyard skills
- Transfer of knowledge/technology





THE HEART OF THE MACHINE

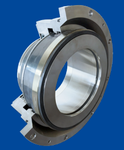
The dredge pump

The in-house designed CSD dredge pump delivers unrivalled performance. Its large spherical passage keeps blockage to a minimum, while the hatch above the pump provides easy access for wear-part replacement.

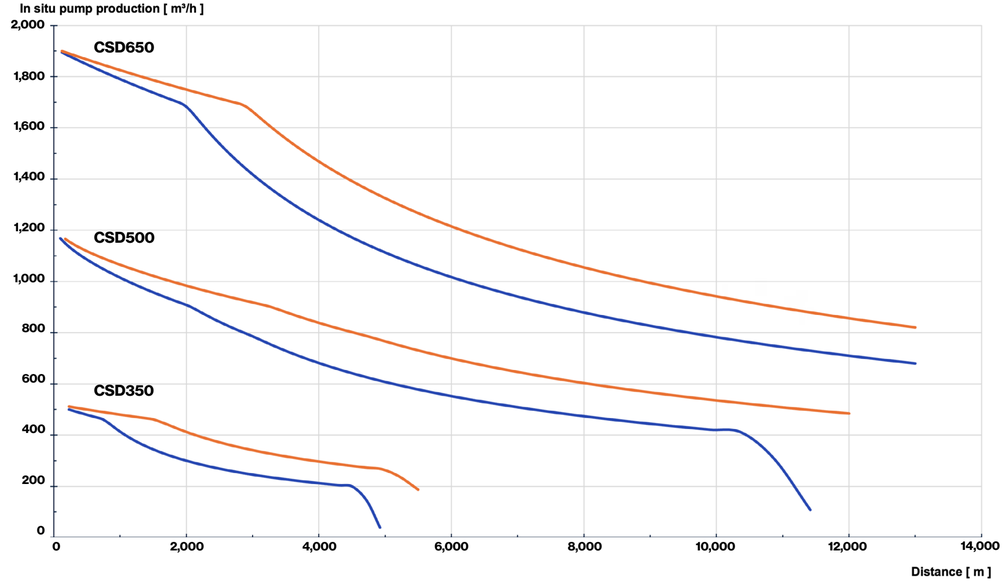
Built to last
The pump parts in contact with the abrasive mixture are cast from wear- and impact-resistant materials. Depending on the soil type, we deliver the most suitable wear material.

Easy maintenance
The inspection piece in front of the dredge pump is used for debris removal from the impeller, and can be easily removed to allow for (dis)mounting cast pump parts.

Mechanical shaft seal
Damen's highly efficient dredge pumps feature a maintenance- and environmentally-friendly mechanical shaft seal. Requiring no grease or gland water, this minimises service downtime.



CSD PRODUCTION



Production curves
Fine sand, D_{50}: 0.11 mm, In-situ density: 1,900kg/m³

At max. dredging depth and 25% concentration. Calculations assume free flowing sand and no restriction on suction side. Discharge pipe is straight and horizontal with an elevation of 2 metres.
Discharge diameter 350, 500, 650 mm
Discharge diameter 400, 550, 700 mm

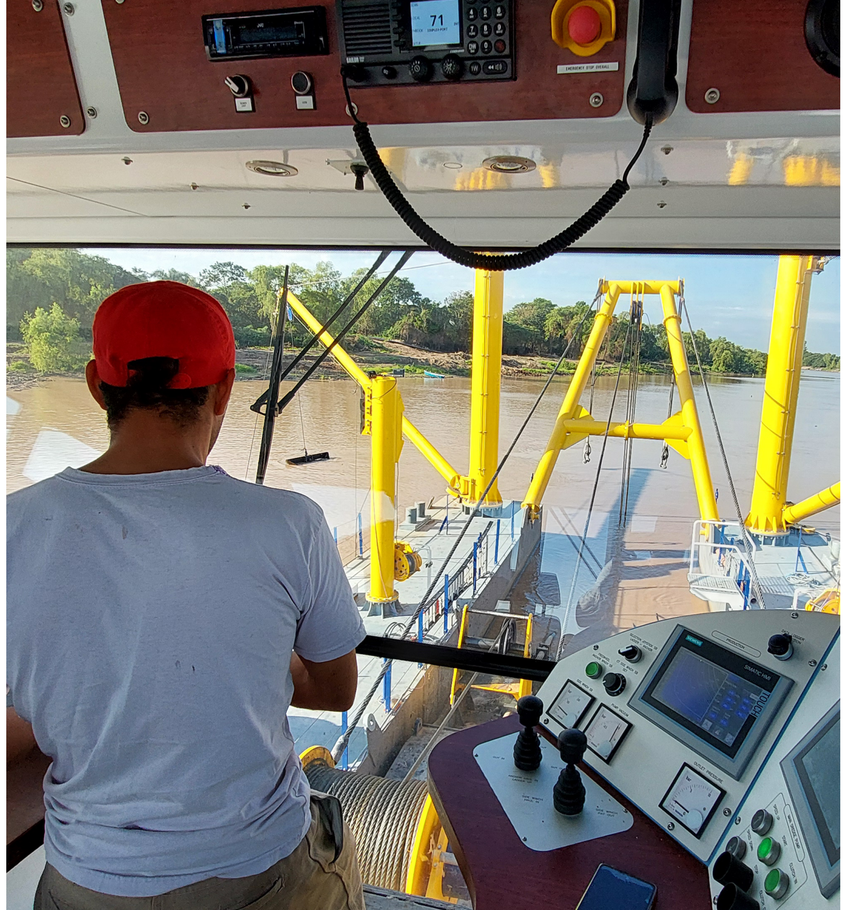
COMFORT & CONTROL

The operating cabin

The operating cabin is ergonomically designed, with conveniently placed components and controls at your fingertips. Due to sound insulation measures and the use of double-glazed windows, noise levels are low. Furthermore, the cabin is placed on shock absorbers to reduce vibration.

A one-man-show

With an excellent view over all essential deck equipment from the operating cabin and the implementation of a sophisticated control system, the Damen CSD allows for operation by a sinlge person.





1



2



3

1 The design of the wheelhouse and placement of deck equipment provides the dredge operator with a clear overview during the dredging process.
2 The design ensures excellent visibility of essential functions.
3 The cabin roof extends beyond its floor, and the grey-tinted, double-glazed front windows are angled to reduce solar glare.

LIFECYCLE SUPPORT

Damen Services

Damen Services cares for your fleet with a wide-ranging portfolio of customer support and after-sales services covering a vessel's complete lifecycle.

Where you need us, when you need us; we support you from deployment to decommissioning. Our diverse service options help you achieve your up-time and reliability goals whilst ensuring low lifecycle costs. Our global service network and availability guarantee a swift response.



START-UP
GETTING YOU GOING

Ship Delivery
Through our worldwide service support network and knowledge of transport contracts, we offer comprehensive logistics to handle own-keel, heavy-lift, towage, and semi-submersible transport deliveries.

Warranty Support
Our philosophy of building long-term relationships with our clients extends to providing excellent warranty support. During the warranty period, we regularly visit our clients to ensure satisfaction with our products. In the event of a problem arising, we are well-placed to solve it swiftly.

Technical Documentation
Our professional and experienced in-house team provides all the technical documentation you need for safe, smooth and efficient operation that maximises the life of your vessel.

DEPLOYMENT
KEEPING YOU GOING

Fleet Support
Our fleet support solutions make sure you can concentrate on your core business. We help you in achieving a reliable performance through offering remote support, the use of technological developments and total lifecycle support.

Training
Our training programmes help to ensure your employees are skilled, motivated, and committed. This approach helps you to reach the all-important goals of reduced operational costs and improved vessel uptime.

Integrated Logistics Support
Integrated Logistics Support (ILS) helps you to improve availability and maintainability of your fleet and assets.

Technical Assistance
Damen Services delivers the technical assistance to ensure optimal performance throughout the entire lifecycle of your vessel. Our specialities cover problem solving, short, well organised docking periods and high quality maintenance and repair.

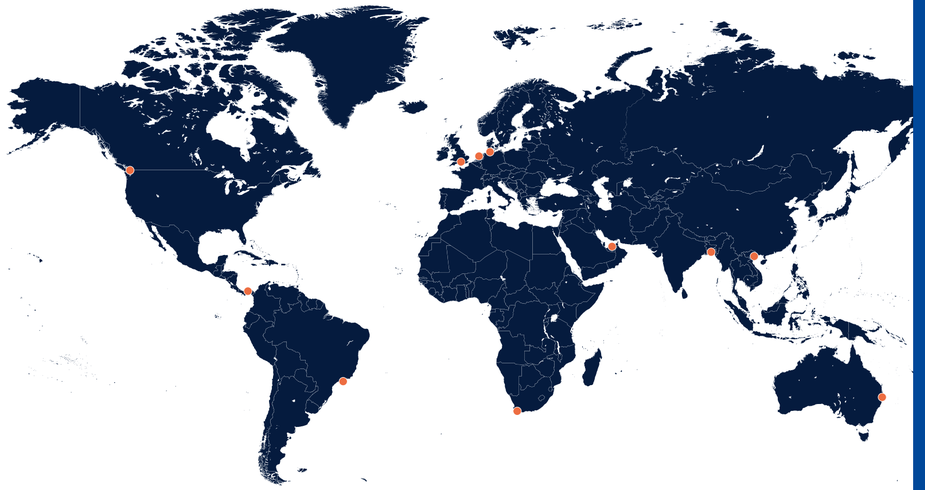
Parts & Equipment
Damen Parts Services offers competitive prices and efficient deliveries. Over the years we have built up strong purchasing power and a considerable supplier network. Thanks to our network of global Service Hubs, we can guarantee short response times.

Repair & Conversion
Our established global sales network provides you with dedicated repair and conversion contacts to assist, whatever your requirements may be.

MyDamen Services Portal
The MyDamen portal is an online platform that makes it easy for everybody involved in operating, maintaining and managing vessels to stay on top of their job.

GLOBAL PRESENCE

Service Hubs



Service Hubs

Europe
Damen Services Netherlands | Gorinchem
Damen Services Germany | Hamburg
Damen Services United Kingdom | Southampton

Africa
Damen Services Africa | Cape Town

Asia & Middle East
Damen Services Bangladesh | Dhaka
Damen Services Middle East | Sharjah | Dubai
Damen Services South East Asia | Haiphong

Americas
Damen Services Brazil | Rio de Janeiro
Damen Services Canada | Victoria
Damen Services Central America | Panama

Australia
Damen Services Australia | Brisbane

Worldwide Service Hubs
Damen's Service Hub network grew rapidly over the past few years. At present there are more than ten hubs on five continents. We continuously enhance our services in regions without proximity to a Damen Shipyard, but where Damen vessels are operating. Local presence enables our skilled engineers to respond faster than ever to your needs.

DAMEN SHIPYARDS GROUP

A broad scope of solutions

General Summary
Damen Shipyards Group operates over 35 newbuild and repair yards, plus Service Hubs, sales offices and marine components facilities, employing 12,500 people worldwide. Damen has delivered over 7000 vessels in more than 100 countries and builds some 175 vessels annually. Due to its unique, standardised ship-design concept, Damen can guarantee consistent quality.

How we build
Damen's focus on standardisation, modular construction and keeping vessels in stock leads to short delivery times, low total cost of ownership, high resale values and reliable performance. Furthermore, Damen vessels are based on thorough R&D and proven technology.

Products and services
Damen offers a wide range of products including tugs, workboats, naval and patrol vessels, high speed craft, cargo vessels, dredgers, vessels for the offshore industry, ferries, pontoons, and superyachts.

For nearly all vessel types, Damen offers a broad range of services, including maintenance, spare parts delivery, training, and the transfer of (shipbuilding) know-how. Damen also offers a variety of marine components such as nozzles, rudders, winches, anchors, anchor chains and steel works.

Damen Shiprepair
Damen Shiprepair has a worldwide network of fourteen repair and conversion yards of which ten are located in North West Europe. Damen Shiprepair has more than 40 floating (and covered) drydocks, including the longest at 420 x 80 metres, and the widest at 405 x 90 metres, as well as slopes, ship lifts and indoor halls. Projects range from the smallest simple repairs through to class compliance, maintenance, complex refits and the complete conversion of large offshore structures. Damen Shiprepair completes around 1,500 repair and maintenance jobs annually, both at yards, as well as in ports and during voyages executed by our dedicated Harbour & Voyage team.

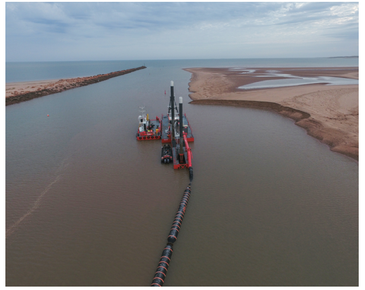










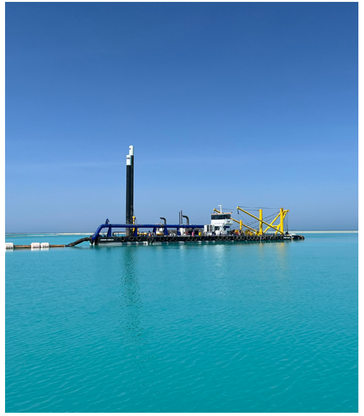




























Colophon

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DAMEN

Damen Shipyards Group
Avelingen-West 20
4202 MS Gorinchem

P.O. Box 1
4200 AA Gorinchem
The Netherlands

+31 (0)183 63 99 22
info@damen.com

BRO-3-0012610