EXECUTIVE SUMMARY
DAMEN CUTTER SUCTION DREDGERS
OVERVIEW
CSD RANGE

CSD 250
CSD 350
CSD 450
CSD 500
CSD 650

![Graph showing production of solids vs. discharge length for different CSD models. The graph includes lines for CSD 250, CSD 350, CSD 450, CSD 500, and CSD 650.](attachment:image.png)
**Typical applications**
- Maintenance
- Sand mining
- Capital dredging

**Typical areas of operation**
- Harbours
- Rivers
- Lakes
- Sheltered waters
<table>
<thead>
<tr>
<th>Feature</th>
<th>CSD 250</th>
<th>CSD 350</th>
<th>CSD 450</th>
<th>CSD 500</th>
<th>CSD 650</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dredging depth max.</td>
<td>6.00 m</td>
<td>9.00 m</td>
<td>12.00 m</td>
<td>14.00 m</td>
<td>18.00 m</td>
</tr>
<tr>
<td>Dredging depth min.</td>
<td>1.00 m</td>
<td>1.00 m</td>
<td>1.50 m</td>
<td>2.50 m</td>
<td>3.00 m</td>
</tr>
<tr>
<td>Cutter power</td>
<td>40 kW</td>
<td>55 kW</td>
<td>110 kW</td>
<td>180 kW</td>
<td>700 kW</td>
</tr>
<tr>
<td>Total installed power</td>
<td>254 kW</td>
<td>447 kW</td>
<td>941 kW</td>
<td>1,293 kW</td>
<td>2,972 kW</td>
</tr>
<tr>
<td>Mixture capacity</td>
<td>1,000 m³/h</td>
<td>2,000 m³/h</td>
<td>3,000 m³/h</td>
<td>4,000 m³/h</td>
<td>7,000 m³/h</td>
</tr>
<tr>
<td>Discharge piping</td>
<td>250 mm</td>
<td>350 mm</td>
<td>450 mm</td>
<td>500 mm</td>
<td>650 mm</td>
</tr>
<tr>
<td>Length o.a.</td>
<td>19,00 m</td>
<td>26,00 m</td>
<td>33,15 m</td>
<td>38,50 m</td>
<td>61,20 m</td>
</tr>
<tr>
<td>Beam o.a.</td>
<td>4,20 m</td>
<td>6,00 m</td>
<td>6,95 m</td>
<td>7,95 m</td>
<td>10,50 m</td>
</tr>
<tr>
<td>Total weight</td>
<td>30 tons</td>
<td>55 tons</td>
<td>115 tons</td>
<td>140 tons</td>
<td>545 tons</td>
</tr>
</tbody>
</table>
STRONG POINTS

- Basic design
- Engineering/Standardization
- Research
- Spares & Services
- Components/principles
- Ergonomics
Dredging Equipment

**BASIC DESIGN**

- Transportable by road
- Spacious / ergonomic design
- Mechanical ventilation
- Easily dismountable
- Low maintenance
- “Delivery from stock”
- Heavy duty design
- Modular design
- Good all-round visibility
- Class approved construction
**Engineering**
- Dedicated engineering teams per ship type
- Standard designs and components
- Standard engineering manuals
- 3D engineering

**Standardization**
- Customer feedback
- Internal quality improvement forms
- Travel reports of service engineers
- Monthly meetings per ship type
- Optimization of dredging installation
- Development of production calculation programs
- In-house dredge pump design and development
- Noise level predictions
- FEM calculation construction
- Soil cutting performance
- Soil investigation & dredging consultancy
Operation and maintenance
- Ergonomics and layouts of engine room, cabin and deck
- Logically placed components and controls
- Standard consoles

Comfort
- Ventilation and lighting
- Sound absorbing insulation and sound absorbing ceiling in the cabin
- Standard air-conditioning and heating
- Mechanical ventilation of engine room
- Minimal crew, maximum efficient operation
- Gray-tinted, double glazed windows
- Front window in sloped panel
Dredging Equipment

COMPONENTS / PRINCIPLES

- Proven heavy duty technologies and principles
- Strong constructions, well above class requirements
- Modular design
- Continuous improvement of standards
- Standardized components and principles
  - Cutter shaft in oil filled casing with bearings
  - Cutter with demountable chisels / points
  - Balanced side wire blocks
  - Removable spud doors
  - Corrosion prevention
  - Components of well known manufacturers
After sales department
- Components with short delivery time
- Complete package of spare parts
- Registration of components
- Advice and support
- Dedicated team involved from order to shipment

Damen Field Service
- Post delivery support
- Warrantee and after sales services
- Training courses (in house and on site)
- Technical check-ups
- Service in remote areas
- Bureau Veritas certification
- De- / increase cutter depth
- Anchor boom installation
- Spud carriage installation
- Electric deck crane
- Day accommodation
- Navigation package
- Communication package
- Valves in dredge pipes
- Dredging instrumentation
- Toilet
- Kitchen
- Refrigerator
- Lighting
- Water pump system
- Air-conditioning / heating
**Production measurement**

- Electro magnetic flow meter
- Radio active density meter
- PLC based production calculation unit

**Positioning system**

- Horizontal and vertical position calculated using satellites
- Visualization in NAVGUARD Profiler
VARIOUS OPTIONS

- Electric deck crane
- Valves in dredge pipes
- De-/increase cutter depth
- Bureau Veritas certification
- Dredging depth: 1 – 6 m
- Cutter power: 40 kW
- Max mixture capacity: 1,000 m³/h
- Total installed power: 254 kW
- Transportable in three 40’ containers
- Dredging depth : 1 – 9 m (option: 10 m)
- Cutter power : 55 kW
- Max mixture capacity : 2,000 m³/h
- Total installed power : 447 kW
- Heavy robust design
- Dredging depth: 1.5 – 12 m (option: 14 m)
- Cutter power: 110 kW
- Max mixture capacity: 3,000 m³/h
- Total installed power: 941 kW
- Spacious & ergonomically designed operating cabin
- Dredging depth: 2.5 – 14 m (option: 16 m)
- Cutter power: 180 kW
- Max mixture capacity: 4,000 m³/h
- Total installed power: 1,293 kW
- Simultaneous and continuous operation of all functions
- Dredging depth: 3 – 18 m (option: 25 m with submerged dredge pump)
- Cutter power: 600 kW
- Max mixture capacity: 7,000 m³/h
- Total installed power: 2,972 kW
- Transportable by road due to dismountable design
DAMEN DREDGING EQUIPMENT

P.O. Box 1021
3860 BA NIJKERK
The Netherlands

Phone +31 (0) 33 247 40 40
E-mail contact.dde@damen.com
Website www.damen.com

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