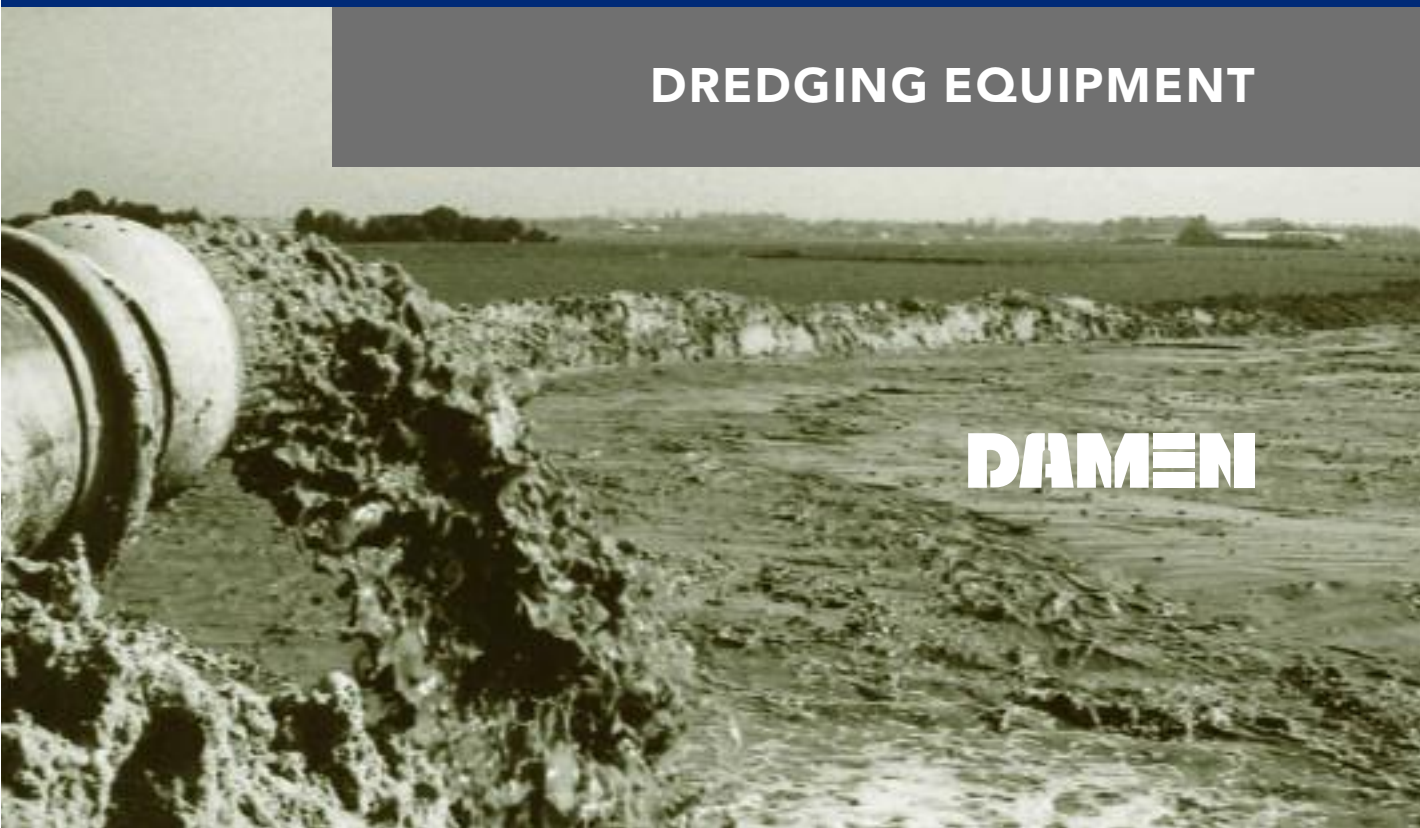




TRAILING SUCTION PIPE SYSTEMS

DREDGING EQUIPMENT



DAMEN



In addition to already mentioned dredging components, additional systems can be supplied for the trailing suction hopper dredger, enlarging the functionalities of the dredger.

ADDITIONAL EQUIPMENT

- Degassing systems for in board and submersed dredge pumps
- Separate self-supporting booster unit in container on deck
- Plain suction pipe, combined with trailing pipe or separately
- Load & Draught measurement
- Suction Tube Position Indication
- Dredge pump process monitoring instrumentation
- Positioning systems linked with survey data
- Electronic Monitoring and Logging Systems

THE DAMEN APPROACH TO DREDGING

Following the full-service Damen approach to dredging our engineers are readily available to support our customers. We can for instance visit a dredging vessel to monitor its operational efficiency. Doing so we can advise on the working methods, the equipment or instrumentation used, etc. We also support yards at refurbishments, i.e. taking down required dimensions on the vessel, determining the course of piping etc. And of course, when systems or components are delivered, our service engineers can give on-site assistance during mounting and commissioning. Maintenance jobs, repairs and the replacement of wearing parts complete our extensive customer support programme.

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

Specifications are subject to modification without notice.

TRAILING SUCTION PIPE COMPONENTS

DAMEN

DAMEN DREDGING EQUIPMENT

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Damen Dredging Equipment designs and manufactures trailing suction pipe systems. These dredging systems are the core of trailing suction hopper dredgers. It consists of the trailing suction pipe with its hoisting system, the dredge pump and the suction and discharge elements.



Damen Dredging Equipment does not build the entire vessel, but delivers a prefabricated dredging kit to the yard. This can be a Damen yard or any other yard. In close co-operation with this yard the dredging system is adapted to the specific vessel all in accordance with the needs of the dredging contractor.

The contractors dredging requirements are the starting point for the design of the entire hopper dredger. The main questions are: what materials are to be dredged and at what dredging depth? Moreover the functionality of the vessel can be enhanced from hopper loading and bottom dumping only to, for instance, self discharging over a longer pipe line via a special coupling, rainbowing etc. This can be easily inserted in the design.



Trailing suction pipe systems are designed to be mounted to new vessels, as well as to existing barges. In order to fit the new dredging equipment on the existing vessel intensive consultation with the yard is required. As we have decades of experience with these refurbishments the entire process is a matter of routine.

Both the trailing suction pipe and the dredging components on board are part of the extensive range of standard components. All dredging components are designed for the heavy-duty operation conditions in the dredging business. On request special modifications are made – all to ensure that the trailing suction pipe system is exactly in conformity with the contractors requirements to maximise their operational efficiency.

Trailing suction pipe systems can be delivered as complete systems, but components are also supplied separately. It is for instance possible to have a trailing head especially adapted to altered dredging conditions, or to replace a worn suction pipe hinge, or to enhance the vessels functions by adding a barge loading delivery spreader.

All these components are available as standard items according to proven Damen design. Fitting a new item on board of an existing dredger might bring about modifications to this standard, which we gladly make for you.

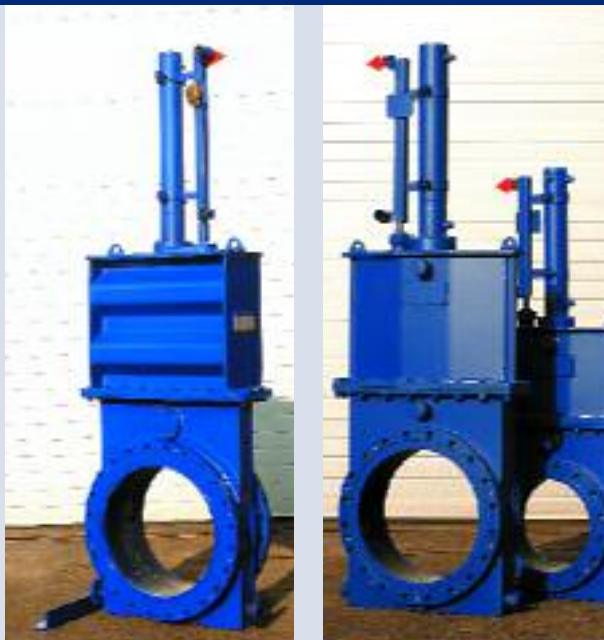
DREDGING COMPONENTS

- California drag head, jetwater assisted
- Single visor drag head, jetwater assisted
- Turning gland
- Intermediate hinge
- Submerged dredge pump with drive
- Single hinge
- Slide flange with special sealing
- Gantries
- Service frame
- Winches, hydraulically or electrically driven
- Swell compensator
- Dredge pump, single or double walled
- Jetwater pump
- Rubberring gate valves
- Delivery chute
- Poor mixture over board system
- Barge loading delivery spreader
- Overflow
- Jetwater monitor
- Bottom doors
- Side couplings
- Rainbow installations
- Bow couplings



TRAILING SUCTION PIPE SYSTEMS

STANDARD COMPONENTS



RUBBER RING GATE VALVES

In both suction and discharge pipelines on board of dredgers rubber ring gate valves can be mounted in order to isolate certain pipe routings. These hydraulically operated valves are especially designed for the harsh environment as present in the dredging industry.

The robust housing resists the high pressures of discharge lines (pressure range from dredge pump vacuum to 16 bars). The slide sealing is provided by replaceable synthetic rubber sealing rings. Proximity switches ensure open-closed position indication; a visual indication is provided as well.

The valves can be delivered with Bureau Veritas, Lloyd's or Germanischer Lloyd approval.

DREDGE PUMPS

A large range of dredge pumps is available. Not only the pipeline diameter is decisive for the choice of the dredge pump, also its functions determine what type to choose. Hopper dredgers using the dredge pump for hopper loading only, have a low pressure dredge pump installed. When the hopper dredger is to self-discharge on a medium range distance, a middle pressure dredge pump is chosen. If longer discharge distances are required, a separate high pressure dredge pump is mounted. These dredge pumps are available in various foundry materials.

To work at larger dredging depths the trailing suction pipe can be equipped with a submerged dredge pump. On request the in board dredge pump can be provided with a second heavily reinforced outer steel casing.

Various types of shaft sealing are available, ranging from simple grease packing through a floating water chamber to a state-of-the-art mechanical seal.

