Suction Pipes

Key link between head and hopper

Suction pipes fulfill a number of key functions in the dredging process. They ensure full control of the draghead on the bottom, transport the dredge mixture to the hopper, transmit the trailing force from the draghead to the ship and support jet water and other pipeline systems and cabling. IHC Parts & Services suction pipes are the result of long years of experience and hard practice.

Developed integrally

With ongoing upgrading to state-of-the-art design, Parts & Services supplies standardised two-part suction pipes for installation on hopper dredgers with internal diameters from 350 to 1200mm. They are developed integrally with all other components to ensure optimal cost-effectiveness of operation. Their hinged construction together with swell compensation contributes to an ideal contact of the draghead with the bottom.

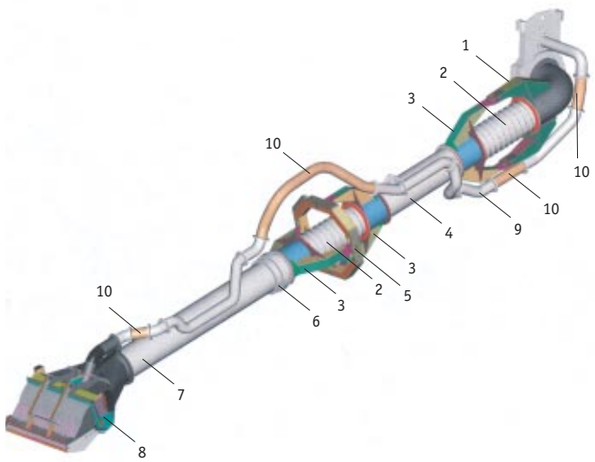
Tailored models

Naturally Parts & Services also supplies tailored or customised models that incorporate specific features required by a client or project. Currently these may include:

- installations assembled to a drag load of 4000 kN
- submerged dredge pump (up to 10,000 kW) in upper or lower pipe
- capable of operating at a depth of 120 meters (150 meters feasible)
- multi-part construction
- larger diameters than standard
- jet water line to 700mm diameter or 20 bar operating pressure

Maximum pipe movement

The suction pipe is hoisted outboard and lowered to dredging depth with the aid of gantries. The suction bend is mounted in a trunnion which forms part of the sliding piece; as the pipe goes outboard the sliding piece enters the guide on the hull and is lowered until the bend is in line with the suction inlet below the waterline. Once in place the draghead can faithfully follow the bottom profile by means of the swell compensator and cardan joint. Lateral slopes can be followed with the help of the turning gland. Profiles larger than the stroke of the swell compensator can be absorbed by winch adjustment. The exact position of the draghead can be defined by measuring the angles of the suction pipe sections.



Suction pipe assemblies built by Parts & Services basically consist of the following components:

1 suction bend complete with arms
2 suction hose
3 arm piece
4 upper pipe section
5 cardan ring
6 turning gland
7 lower pipe section
8 draghead
9 jet water line
10 jet water hose

Result of long experience

Parts & Services suction pipes have been designed to offer numerous operational benefits.
A breaker device can be installed to ensure overloads do not affect key hardware. Arm pieces, turning gland, upper and lower pipe sections and draghead are connected by bolts allowing easy maintenance and draghead replacement.
Suction hoses are equipped with steel rings to prevent them from collapsing under the influence of vacuum.

Maintenance and wear

A patented 'rapid exchange bend' in the suction pipe protects the integrity of the full assembly by reducing the negative effects of heavy wear caused by the dredge mixture. It separates the wearing function from the structural and support function. With the use of simple equipment the bend can be replaced fast while the arm itself remains in place. Suction pipes with a submerged dredge pump benefit particularly as they wear faster due to raised production, and exchange being a more elaborate process due to the greater number of pipes and power cables connected.

with submerged dredge pump on horizontal frame for easy access.

... hinged construction contributes to an ideal contact with the bottom.

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Submerged dredge pump units

Incorporating a submerged dredge pump in the suction pipe offers various advantages. The maximum dredging depth and mixture density can both be increased and production raised. Various are available depending on application:

- horizontal frame - which ensures easy access
- tilted frame - ideal for retrofitting on smaller vessels
- cone type - which are the lightest and smoothest

Improving intelligence

To improve operational control and thus the cost-effectiveness of the whole dredge process, Parts & Services is making increasing numbers of dredging components 'intelligent'. Components requiring power (electric, pneumatic or hydraulic) and optimal control such as the suction pipe, active draghead, submerged dredge pump motor, and various lubrication systems and auxiliary equipment can be precisely controlled by information feedback from sensors. The significance of this increased control capability is that the dredging process can be guided with a precision unknown until today.

All cables and lines must be linked to the power and control systems onboard. Where the pipe hinges these lines must be flexible and properly protected. Parts & Services has many years of experience in assuring reliable long term operation of these exposed systems.

The workability assessment of vessels equipped with Parts & Services suction pipes can be incorporated in the design process and operations manual for trailing dredging and stationary dredging, and suction pipe handling.

Proper protection assures reliable operation.

Today rough seas represent much less of a barrier to cost-effective dredging than in the past.

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Keeping dredging hardware profitably at work

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