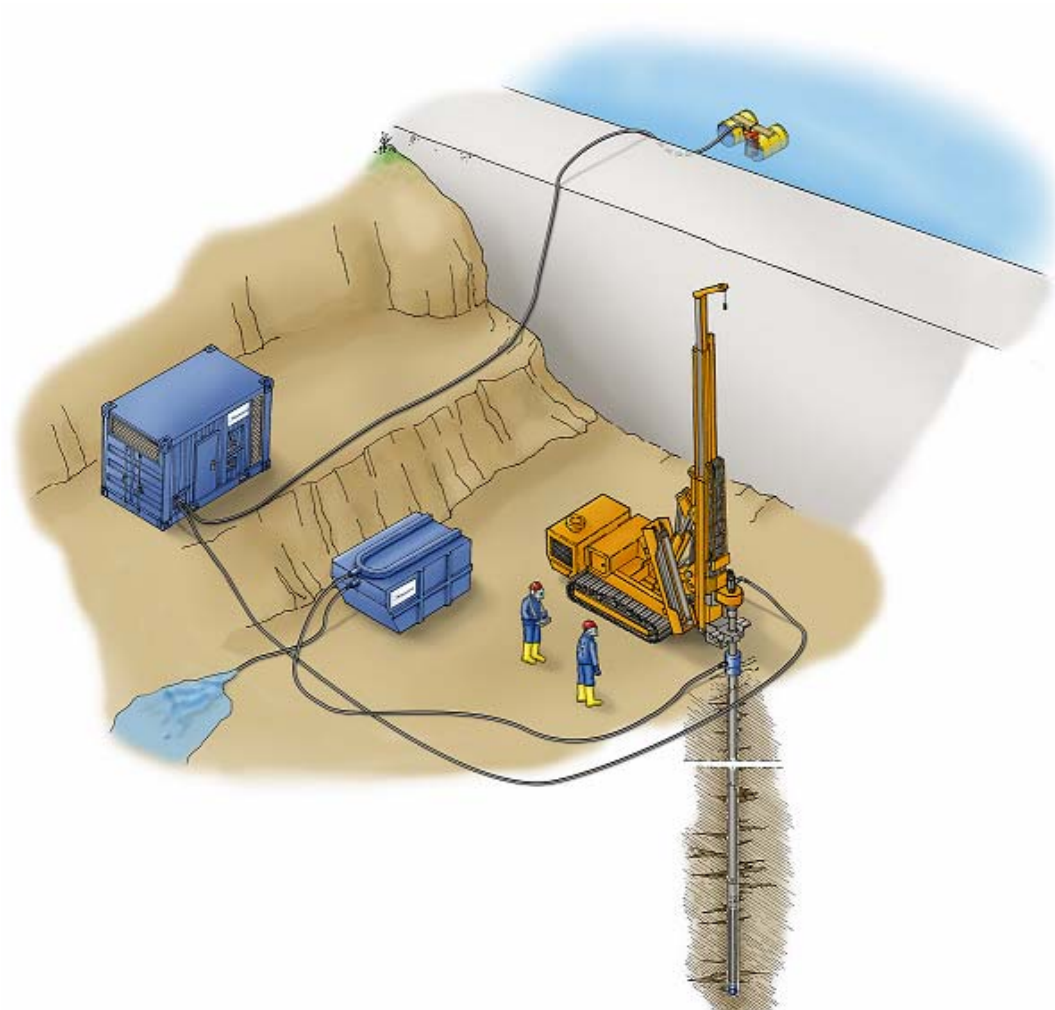
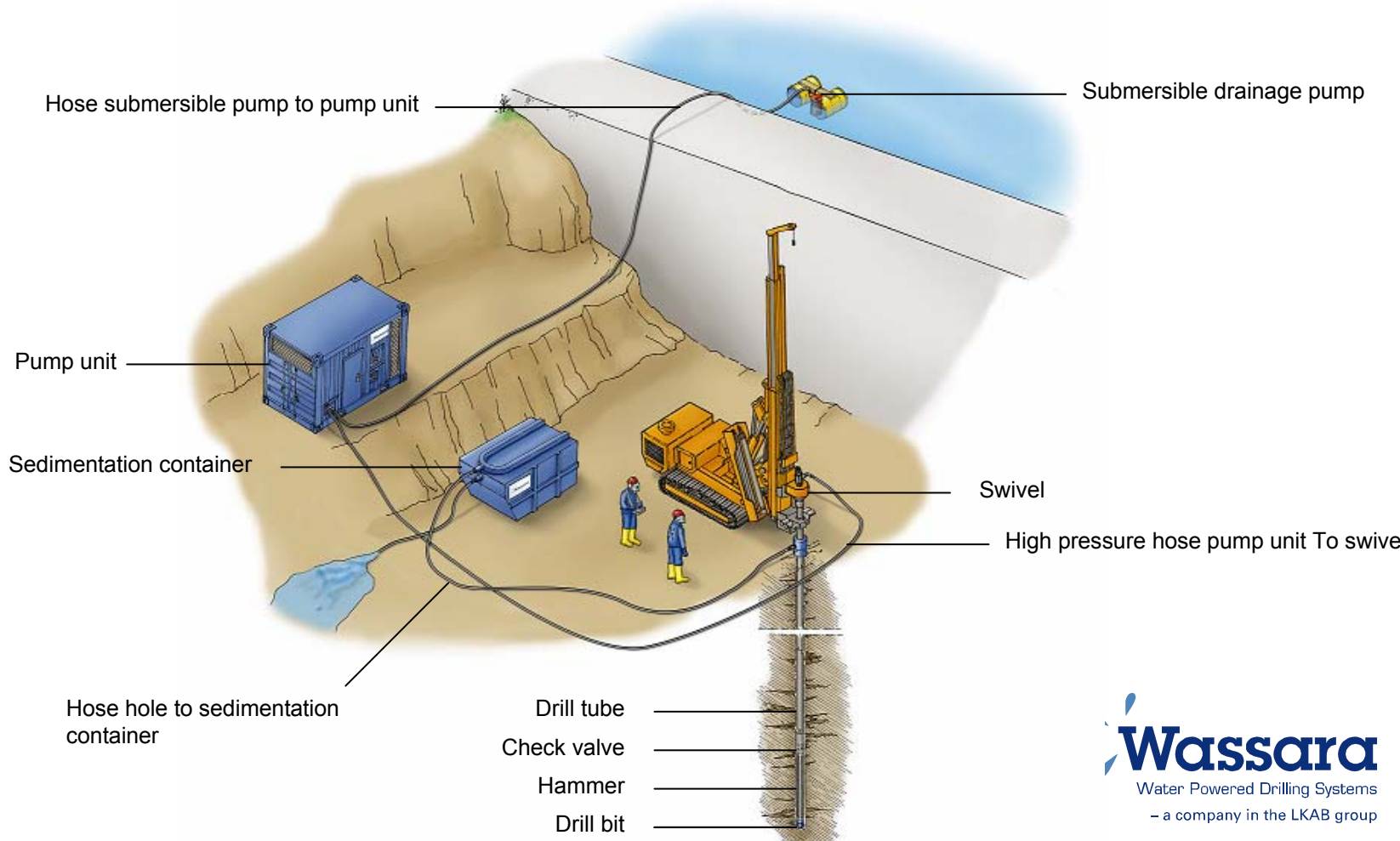


Wassara Drilling System - Construction

Key components



Wassara Drilling System - Construction Portfolio Strategy



Wassara Drilling System - Construction Drill bits



Optimized for Wassara

Wassara AB has developed a series of heavy duty drill bits, fully adapted to water-powered drilling.

Effective cuttings transport

The Wassara System places different requirements on the design of drill bits than conventional techniques. For example, the Wassara bits have smaller flushing holes and a contact surface that is adapted to the power of the hammer.

Excellent wear resistance

The correct combination of shape and dimension depends on the geology where the drill bit will be working.

Wassara Drilling System - Construction Hammers



The Wassara hammer is the heart of the Wassara Drilling System, patented worldwide.

High efficiency

The water-powered Wassara hammer assures rapid, efficient and environmentally friendly drilling.

Drills long straight holes

The hammer is delivered with a stabilized piston case. The result is maximum hole straightness and superior precision drilling.

Low energy consumption

Powered by water, the Wassara hammer uses less energy and can strike at roughly double the frequency rate of a conventional DTH pneumatic hammer.

All components in the Wassara hammer are available as spare parts and can be replaced easily

Wassara Drilling System - Construction Check valves



The check valves is designed to prevent cutting to enter the hammer

Wassara check valves are available in different dimensions, for drilling both upwards and downwards.

Wassara Drilling System - Construction Drill tubes



Outstanding Precision

Precision manufacturing assures drill tubes of uniform superior quality.

High strength

The material thickness of the tubes is adapted to drilling with water under high pressure.

High stiffness

Straighter holes, thanks to stiffer tube design

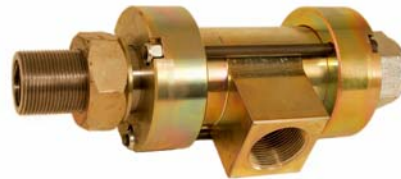
All Wassara drill tubes are tight since equipped with O-rings

Wassara drill tubes are friction-welded in lengths of 1000, 1500, 2000 and 3000 mm.

Wassara Drilling System - Construction Swivel



From the hose of high-pressure pump to the drilling rig, water is conducted through a Wassara Swivel. The swivel transfers the water to the drill string.



Stenberg 600 Swivel, is mounted above the rotary head.



2 3/8 API Reg Swivel, is mounted below the rotary head.

Wassara Drilling System - Construction High Pressure Hoses-EN856 4SP



Construction:

Inner tube: Synthetic oil resistant rubber

Cover: Abrasion, weather, and heat resistant rubber

Reinforcement: Four spirals of high tension steel wire

Safety factor: 1:4

Temperature: -40°C - + 100°C

Design: Yellow label, wrapped

Applications/Characteristics:

A hose with pressure performance equivalent to EN956 4SP.

The hose is MSHA-approved.

Wassara Drilling System - Construction Pump Unit



WASP – Wassara high pressure water pump units.				
Pump model	Max flow	Max pressure	Required power	Diesel engine power
WASP 50 Diesel	137 l/min	170 bar	43 kW	76 kW
WASP 80 Diesel	219 l/min	200 bar	80 kW	110 kW
WASP 150 Diesel	476 l/min	200 bar	173 kW	183 kW

Wassara Drilling System - Construction Service equipment and training



Wassara hammer service equipment



Training of drillers and service people

Wassara Drilling System - Construction

Key Advantages and benefits

Environment friendly, only pure water and high efficiency

Drilling economy

- Low energy consumption due to high drilling efficiency and low losses.
- Minimal wear of hammer, bit and drill tubes due to low flushing velocity.
- Low flushing velocity and "0-pressure" minimizes damage of the borehole.

Drilling performance

- Straight holes
- Facilitates drilling in water rich formations (pressurized zones).
- Minimum disturbance to the formation - enables drilling in sensitive and narrow areas.
- Outstanding capabilities to drill blow 200 m (not limitation on hole depths).
- Penetrates most material.

Environment

- No oil injection in to the formation.
- Low noise level.
- Clean air.