wassara

PRODUCT CATALOUGE

First Edition





Over 30 million meters drilled, as of 2026

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wassara

High-performance drilling products and systems for both surface and underground drilling and surveying

"We are very proud of our water-powered DTH hammer. Intense development work through the years has given an absolutely unique product where water is used to power a drill system. The water-powered drilling has numerous features and benefits, proven by over 30 million meters of boreholes in LKAB mines alone".

– Johan Jeansson, Senior Technical Specialist, LKAB Wassara



Founded in 1988, Wassara has been at the forefront of water-powered drilling technology for over 30 years.

Today, our efficient and sustainable solutions are used by leading mining, construction, and geoenergy-companies around the world.



THE ROAD TO WASSARA TODAY

LKAB Wassara is a Swedish company developing and manufacturing unique water-powered drilling systems for high performance in surface- as well as underground drilling operations. The heart of the Wassara drilling system is the world patented water-powered down-the-hole hammer.

The drilling systems have been used for more than 30 years in various applications within many industries; mining, exploration, ground engineering, dams, geothermal, marine, oil & gas storage. Our experience covers more than 25 million drilled metres working in different locations around the world.

1980s

- Swedish company Atlas Copco decides to cancel the not-yet-named experimental water-powered drilling project
- A Senior Engineer did some calculations and decided that it will never work
- Atlas Copco-engineers and brothers Per and Dan buy a patent from Atlas Copco
- Project Engineer Fredrik joins the brothers and the company G-drill is founded

1988

- LKAB buys G-Drill AB, but the company officially keeps the name G-Drill
- G-Drill starts branding the new water-powered Hammers with “Wassara”
- The name is derived from the Finnish/Sami-word for Hammer, “Vasara”

1992

- Wassara-hammers start to replace Top- and Air-hammers in the Malmberget Mine

1995

- The Malmberget Mine has fully replaced previous technology with Wassara-hammers – Kiruna mine is half-way there

1996

- New BK Drill Rigs from Epiroc are released, designed for drilling with Wassara-hammers
- The Swedish company Sandvik buys 40% of G-Drill, and Sandvik becomes the External Sales-channel for the Wassara hammers

1994-97

- Kidd Creek Mine and other mines in Canada are the first external drilling project for Wassara

1996-2006

- LKAB (G-drill) / Sandvik

2006

- LKAB buys back the 40% from Sandvik, to safeguard the availability of the Wassara-technology
- The company is renamed and re-branded into LKAB Wassara and starts in-house Sales and Marketing-department

HOW WASSARA WORKS

The Wassara Down-the-Hole (DTH) Hammer

The Wassara water-powered DTH hammer is designed for drilling in hard, stable rock and in overburden applications where casing is required.

Instead of compressed air, the hammer is powered by high-pressure water, which provides several important advantages compared to conventional air-powered DTH hammers and top hammer systems.

Water-powered drilling offers:

- **Lower energy consumption**
- **A cleaner and quieter working environment**
- **Very straight boreholes with minimal deviation**
- **The ability to drill deeper holes**
- **High drilling efficiency**
- **Minimal impact on the surrounding ground**

These benefits make the Wassara-hammer particularly suitable for sensitive environments and demanding drilling conditions.

Simple and Robust Design

The Wassara DTH-hammer has a very simple internal design. It contains only two moving parts:

- the piston
- the valve

With so few moving components, the hammer is highly reliable and delivers consistent performance, even in difficult ground conditions.

Powered by High-Pressure Water

High-pressure water, with delivery pressures of up to 180 bar, is used to drive the hammer's impact mechanism.

The water accelerates the piston, which strikes the drill bit at a high frequency directly at the bottom of the hole. When the water exits the hammer, the pressure drops and the flow velocity becomes relatively low.

Despite this, the water flow is still sufficient to:

- transport drilled cuttings to the surface
- keep the borehole clean during drilling

At the same time, the water column above the hammer creates hydrostatic pressure inside the hole. This helps to:

- stabilize the borehole walls
- reduce the risk of collapse
- prevent uncontrolled inflow of surrounding groundwater

This contributes both to safer drilling and to reduced environmental impact.

Direct and Efficient Energy Transfer

In a DTH-system, the piston always strikes directly on the drill bit, which means that almost all impact energy is transferred into the rock.

In contrast, a top hammer system loses approximately 4–6% of impact energy at each drill rod connection, since the percussion unit is located on the drill rig rather than at the bottom of the hole.

Air-powered and water-powered DTH hammers work according to the same basic principle, but there is a key difference: operating pressure.

Why Water Delivers Higher Performance

The energy of each blow depends mainly on:

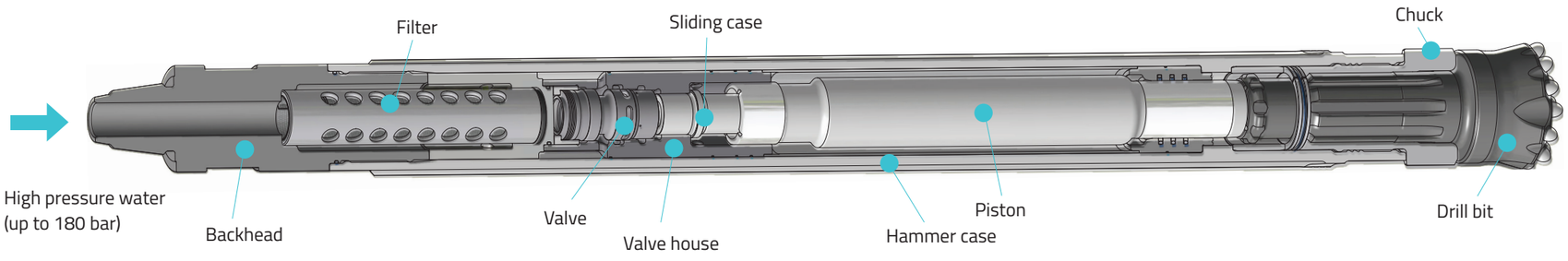
- the piston mass
- the piston impact velocity

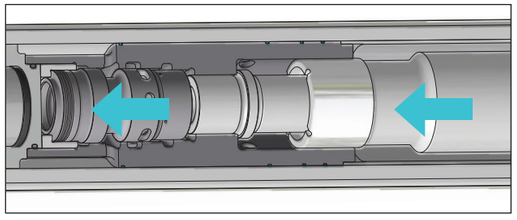
These factors are largely fixed by the hammer size and material properties.

The total output power of the hammer, however, also depends on the **pressure of the medium** driving the piston.

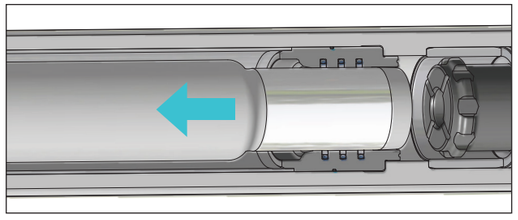
Water can be supplied at significantly higher pressures than compressed air, which allows a water-powered DTH hammer to deliver higher power and better energy efficiency.

This is why Wassara's water-powered DTH technology achieves **high performance, straight holes, and stable drilling** — even in deep, water-rich, or challenging formations.

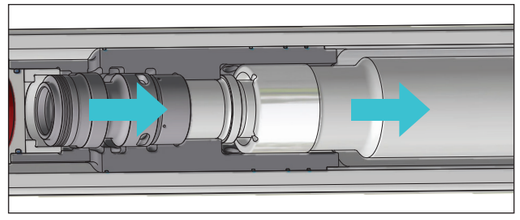




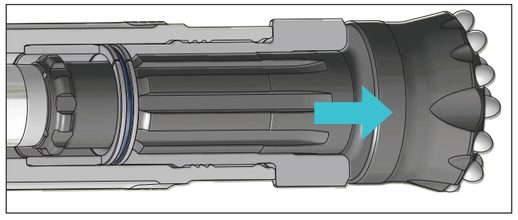
1 The valve is opened and the piston moves back from its striking position.



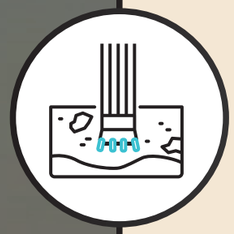
2 The piston gets in position, ready to strike.



3 The valve closes and the high-pressure water forces the piston to strike.



4 The piston strikes the bit. The valve opens to release the water through the bit. A new cycle starts.



HIGH-PERFORMANCE DRILLING IN ANY FORMATION

Water-powered DTH drilling delivers higher striking frequency and penetration with minimal consumption, unaffected by water inflow, dense clay, or debris.

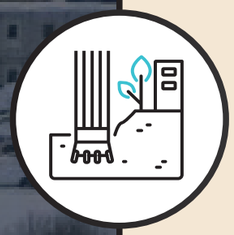
Unlike air-powered systems, performance remains constant below the water table, ensuring maximum efficiency in deep and water-bearing boreholes.



LOWER ENVIRONMENTAL IMPACT & SAFER WORKPLACE

Water-powered DTH hammers use less than half the installed power of air systems, dramatically reducing fuel consumption and CO_2 emissions. When operated with electric pumps, emissions are nearly eliminated.

Oil-free operation prevents ground contamination and exposure to oil mist or dust, while water-filled boreholes significantly reduce noise—ideal for underground and environmentally sensitive projects.



SAFER AND MORE SUSTAINABLE DRILLING

Compressed air expands aggressively at the drill bit, creating high stress that can destabilize sensitive formations and damage nearby infrastructure. Water-powered DTH drilling avoids this risk.

With stable pressure, controlled cuttings transport, zero dust, and no need for lubricants, it is the safest and cleanest choice for urban areas, dams, and other sensitive environments.



BETTER BOREHOLE QUALITY AND ACCURACY

Water-powered DTH drilling ensures outstanding straightness and borehole quality. Integrated stabilizer ribs keep the hammer precisely aligned, enabled by low-velocity water flushing that minimizes wear.

Unlike air drilling, water cleans fractures instead of clogging them, improving grouting results and productivity. With the percussion unit at the bottom of the hole, water-powered DTH delivers far higher accuracy than top-hammer drilling, even at greater depths.



COST EFFECTIVE

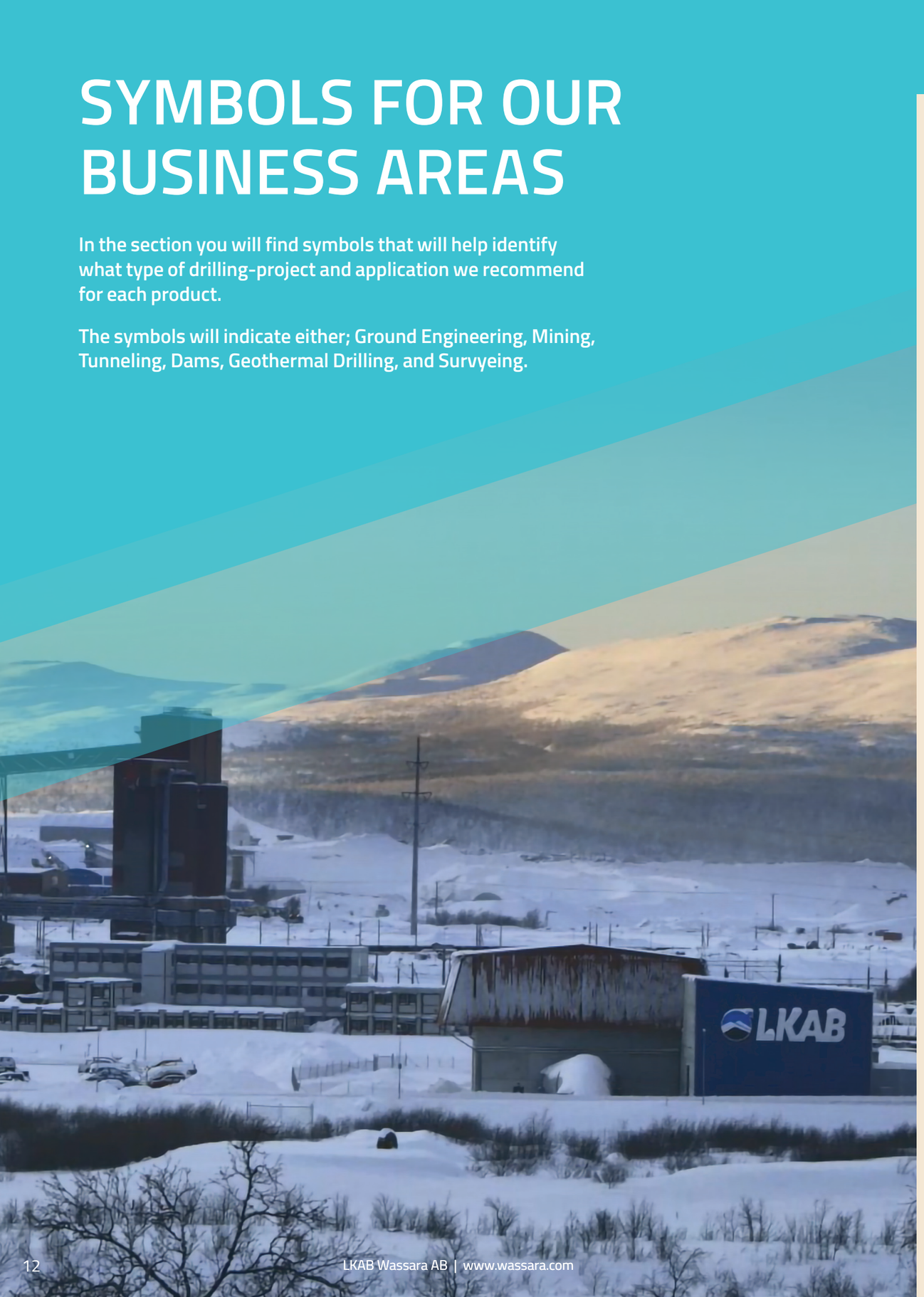
Water-powered drilling significantly reduces total project cost through lower energy consumption, high drilling speed, and reliable performance in all ground conditions.

The Wassara method delivers core-drilling accuracy at two to five times higher speed, maintains efficiency over long holes, and reduces process steps through integrated Jet Grouting. Low wear on equipment extends service life and minimizes maintenance costs.

SYMBOLS FOR OUR BUSINESS AREAS

In the section you will find symbols that will help identify what type of drilling-project and application we recommend for each product.

The symbols will indicate either; Ground Engineering, Mining, Tunneling, Dams, Geothermal Drilling, and Survyeing.





GROUND ENGINEERING

Our technology is well suited for drilling in sensitive areas as well as for drilling long straight holes.



MINING

Wassaras' water-powered technology provides accuracy and efficiency that pushes mining boundaries and eliminates previous limitations.



TUNNELING

Water-rich formations, high back pressures, requirements on the borehole (length, accuracy, etc.) and environmental concerns, are all tunneling challenges that our technology can solve.



DAMS

The Wassara-technology mets the demand on drilling equipment used in dams having the ability to not cause harm or distress to any structure being penetrated.



GEOTHERMAL

Wassara's drilling technology, the same used in LKAB's mines, has shown unique potential for building efficient geoenergy storage, even in densely populated areas, and can be implemented within existing properties.



SURVEYING

Using our own borehole surveying system, The Wassara Explorer™, Wassara-technicians perform accurate and efficient surveying in diffucult environments.

HAMMERS

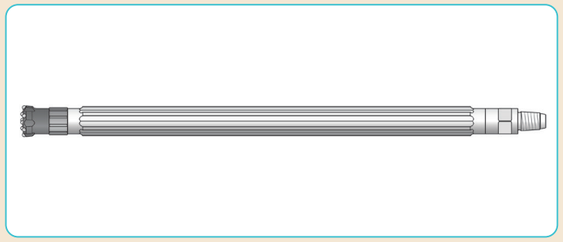
High-performance water-powered DTH hammers for every application. The Wassara technology uses water to power the down-the-hole (DTH) percussion hammer.

This makes it the superior choice for many drilling applications where air-powered DTH hammer, top hammer or rotary drilling equipment are normally used.



W50.210 HAMMER

Hammer size 2”

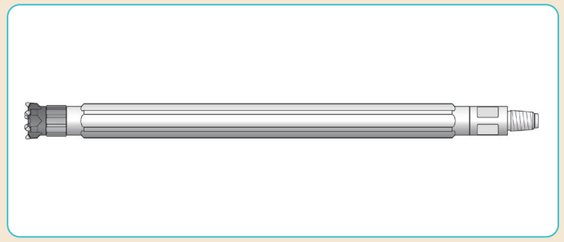




Bit diameter	Ø 60 / 64 mm (2.4 / 2.5”)
Operating pressure interval	50 - 170 bar (725 - 2 465 psi)
Water consumption interval	45 - 150 l/min (12 - 40 USgpm) new to worn
Recommended water pump	WASP50, 150 l/min (40 USgpm) @ 200 bar (2 900 psi)

W70 HAMMER

Hammer size 2 ¾”

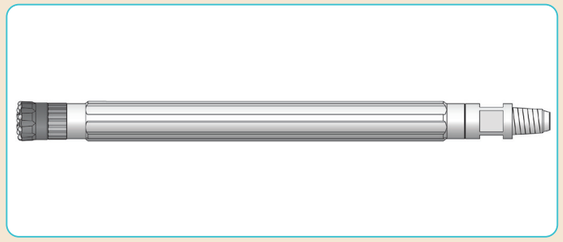




Bit diameter	Ø 82 / 89 mm (3.2 / 3.5”)
Operating pressure interval	60 - 180 bar (870 - 2 610 psi)
Water consumption interval	70 - 270 l/min (18 - 70 USgpm) new to worn
Recommended water pump	WASP100D / WASP100E VSD 360 l/min (95 USgpm) @ 200 bar (2 900 psi)

W80 HAMMER

Hammer size 3”

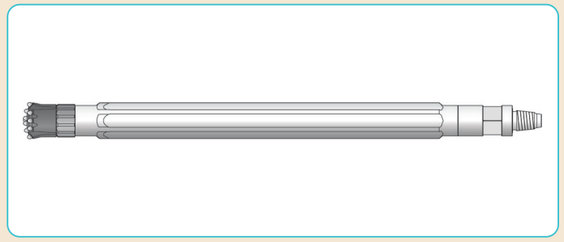




Bit diameter	Ø 95 / 102 mm (3.7 / 4.0”)
Operating pressure interval	60 - 180 bar (870 - 2 610 psi)
Water consumption interval	70 - 270 l/min (18 - 70 USgpm) new to worn
Recommended water pump	WASP100D / WASP100E VSD, 360 l/min (95 USgpm) @ 200 bar (2 900 psi)

W100 HAMMER

Hammer size 4”

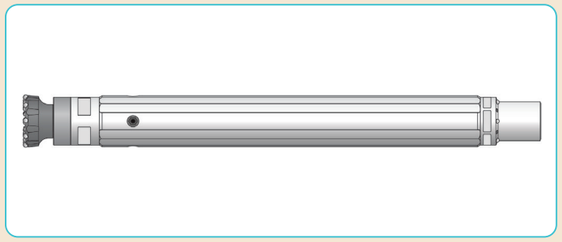




Bit diameter	Ø 115 / 120 / 127 mm (4.5 / 4.7 / 5.0”)
Operating pressure interval	60 - 180 bar (870 - 2 610 psi)
Water consumption interval	130 - 354 l/min (34 - 94 USgpm) new to worn
Recommended water pump	WASP100D / WASP100E VSD, 360 l/min (95 USgpm) @ 200 bar (2 900 psi)

W100 JET GROUTING HAMMER

Hammer size 4”

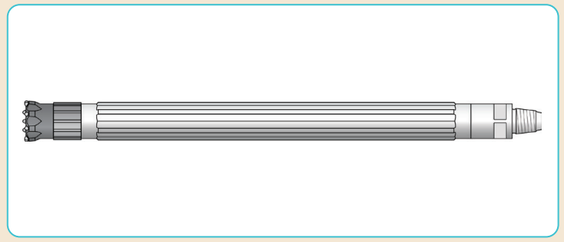




Bit diameter	Ø 115 / 120 / 127 mm (4.5 / 4.7 / 5.0”)
Operating pressure interval	60 - 180 bar (870 - 2 610 psi)
Water consumption interval	130 - 354 l/min (34 - 94 USgpm) new to worn
Recommended water pump	WASP100D / WASP100E VSD, 360 l/min (95 USgpm) @ 200 bar (2 900 psi)

W120.G3 HAMMER

Hammer size 5”



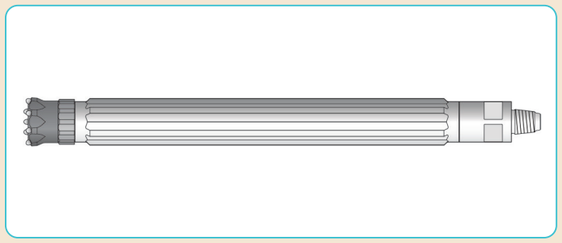




Bit diameter	Ø 130 mm (5”)
Operating pressure interval	60 - 180 bar (870 - 2 610 psi)
Water consumption interval	240 - 500 l/min (63 - 132 USgpm) new to worn
Recommended water pump	WASP200D / WASP200E VSD, 610 l/min (160 USgpm) @ 200 bar (2 900 psi)

W150 HAMMER

Hammer size 6”

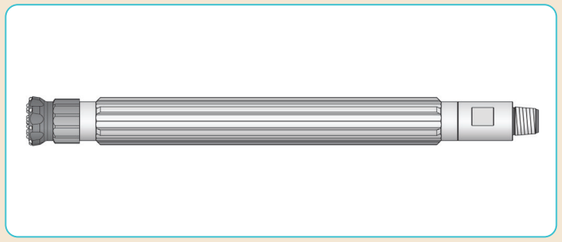




Bit diameter	Ø 165 / 178 / 190 / 203 mm (6.5 / 7.0 / 7.5 / 8.0”)
Operating pressure interval	80 - 180 bar (1 160 - 2 610 psi)
Water consumption interval	270 - 570 l/min (70 - 150 USgpm) new to worn
Recommended water pump	WASP200D / WASP200E VSD, 610 l/min (160 USgpm) @ 200 bar (2 900 psi)

W200 HAMMER

Hammer size 8”

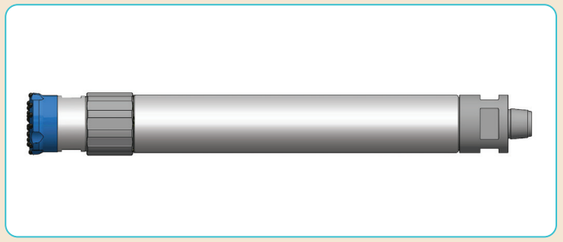




Bit diameter	Ø 216 / 254 mm (8.5 / 10”)
Operating pressure interval	50 - 150 bar (725 - 2 175 psi)
Water consumption interval	280 - 744 l/min (73 - 197 USgpm) new to worn
Recommended water pump	WASP200D / WASP200E VSD 800 l/min (211 USgpm) @ 160 bar (2 320 psi)

W280 HAMMER

Hammer size 12”





Casing outer diameter	406 – 508 mm (16” / 20”)
Operating pressure max	50 – 150 bar (2175 psi)
Frequency at maximum operating pressure	30 Hz (1 800 blows/min)
Recommended water pump	2 pcs WASP200D 800 l/min (211 USgpm) @ 160 bar (2 320 psi)



PUMPS

The water pumps that are offered by Wassara are designed and made for the purpose of driving water-powered hammers.

This means that the pump is suitable for providing the flow and pressure that the Wassara hammer needs to do the drilling as well as to handle the general work environment that is on and around a drill site.





The pump should be chosen with consideration to what hammers sizes it should drive.

This is important both for having a pump that can be adjusted to match what is needed from a drilling point of view, but also to find an energy efficient solution.

Our two general versions

1. Diesel powered –most versatile as it can operate in most areas
2. Electric – quiet and very energy efficient but do require sufficient electric power

Features

Common features that are delivered in most pumps

- Canopy with sound insulation, lifting eye, forklift tunnels in the base frame
- A robust base frame on to which all the components are mounted
- Main control panel with readings, settings, possible warnings and all controls for the pump
- E-stops
- Remote control, often by both wire as well as radio
- Booster pump for the cases where the inlet pressure is not sufficient
- Police filter 50 µm, to protect the pump
- All components can easily be drained (important in freezing conditions)
- Pressure regulating mechanism, often pneumatic (hence also a compressor)
- Safety valve that will protect the pump

The pumps are designed to be practical and easy to operate, however the operator needs to understand the principles of a water pump to be able to handle the pump efficient.

The experience of designing pumps for many years has resulted in pumps that require a minimum of service and can be expected to produce day in and day out.

Some maintenance is, however, needed; such as changing seals, valve seats, parts in the regulation mechanism and sensors when needed.

Special features

- If you have specific needs, we can provide pumps with features such as:
- Hydraulic motor that drives the pump head
- Frequency converter to control the speed of the pump motor (E)
- Pressure reading on the remote controls
- Toolbox, for keeping service tools and other auxiliary equipment
- Flush mode for enabling high water flows
- ATEX certified electronics for operations in hazardous zones
- Diesel engines that match the emission requirements at the drill site
- Various electrician versions for handling different electric grids (V, Hz)
- Electric heater for operation in cold climate

Pump size:	Small	Medium	Large
Model	WASP 80	WASP 100	WASP 200
Capacity	~300 l/min @ 200bar	~450 l/min @ 200bar	~650 l/min @ 200bar
Alternative	x	x	815 l/min @ 150 bar
Hammer	W50-W80	W70-W100	W100-W200

When defining a pump consider the following

- What range of flow and pressure that the pump will operate in
- How to power the pump; diesel or electric is the most common versions
- Specific features need

Based on the above specifications an offer can be provided.



DRILL BITS

Wassara is offering drill bits optimized for the water-powered drilling technology, designed to ensure a long hammer life.



LKAB Wassara is offering drill bits optimized for water-powered drilling technology, built to ensure a long hammer life.

Our drill bits cover our full range Hammer-sizes, as well as a unique and patented W-bit-design for our W70 Hammer.

Why choose a Wassara Drill Bit?

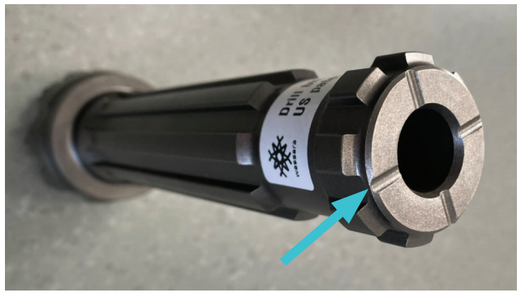
When drilling with a LKAB Wassara Hammer, it is important to use a drill bit that is designed specifically for water-powered DTH drilling.

A mismatch between the hole size in the Wassara Hammer piston and the hole size in, for example and air hammer bit, may cause substanstial damage. Both the striking surface of the piston and the top of the bit shank might effected by such a mismatch.

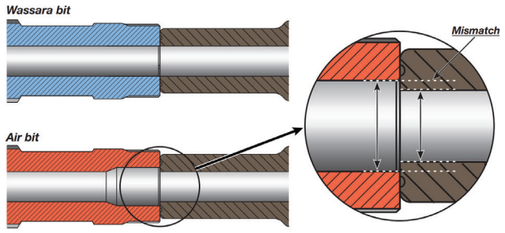
The LKAB Wassara drill bits also have multiple water evacuation channels incorporated in the design on top of the shank to prevent caviation damages, which can occur while using an air DTH drill bit.

Wassara drill bit design features

Open front spacing	Semi ballistic inserts	Matching striking surfaces	High quality steel
Allows drill cuttings to evacuate gently and efficiently	High-quality inserts for efeffective drilling and clearing of drill cuttings	Optimized matching of piston and drill bit	Allows for a more sustainable drilling operation and longer service intervals



Design with water evacuation channels to prevent cavitation and increase service life



Shown in the image above is the mismatch phenomena when an air DTH drill bit is used with a LKAB Wassara Hammer

STANDARD BIT





Available	W70, W80, W100, W120 and W100JG
Design	Convex face with Semi Ballistic TC inserts
Optimized	For Wassara drilling
Best fit	Loser or medium hard rock where wear is expected more on shank than inserts
Typical app	Predrilling for Jet Grouting

PERFORMANCE BIT





Available	All hammers W50-W200
Design	Convex face / Speed with Semi Ballistic TC inserts
Optimized	For Wassara drilling
Best fit	Harder formations with interest to sharpen/ reshape the inserts
Typical app	Demanding applications

SPECIALISED BIT





Available	W70 and W100
Design	Convex face with Spherical PCD inserts
Optimized	For Wassara drilling
Best fit	In hard formations when drilling long holes were the OD of the bit must maintain a long distance
Typical app	Long/deep holes



WASSARA EXPLORER™

The Wassara Explorer™ is a durable rate gyro instrument for survey of boreholes in magnetically disturbed formations in all inclinations. It combines reliable performance, design simplicity and exceptional value for the customer.

THE FOLLOWING ARE SOME OF THE KEY BENEFITS:

- High speed surveying in Continuous Mode
- Live survey data in Wireline Mode
- High positioning accuracy and survey repeatability
- Component and data redundancy
- High-rate capability of up to 2000 °/s
- 40mm / 25mm OD housings
- Wireline or Battery configurations



WASSARA EXPLORER KIT

25 mm wire

Wassara Explorer Kit - 25 mm Wire - 7000001 - Includes the following parts:	
Probe 25mm Wire	1503840
Carrier Case	1003690
Field Computer + Wassara Explorer Software	1003657

Available Accessories	
Communications Box - Required for online surveying (Wire)	1003721
Survey Winch - Contact Wassara for winch options	N/A
Weight Rod Solid	1503967
Weight Rod Eccentric	1503968
Depth tracker (Bluetooth) - alternative to winch for depth tracking	7000009
Formation	Loose deposits, gravel, rounded sand, boulders and large granite blocks
Project year/time	2018 and ongoing (per March 2022)

WASSARA EXPLORER KIT

40 mm wire

Wassara Explorer Kit - 40 mm Wire - 7000002 - Includes the following parts:	
Probe 25mm Wire	1503821
Carrier Case	1003690
Field Computer + Wassara Explorer Software	1003657

Available Accessories	
Communications Box - Required for online surveying (Wire)	1003721
Survey Winch - Contact Wassara for winch options	N/A
Weight Rod Solid*	1503941
Weight Rod Eccentric	1503942
Weight Rod Solid Aluminium	1503943
Centralizer kits (3” to 16”) **	7000004-XX
Depth tracker (Bluetooth) - alternative to winch for depth tracking	7000009

** At least one Weight Rod is needed to use Centralizers*

*** Includes two complete centralizers, hook wrench*

WASSARA EXPLORER KIT

40 mm battery

Wassara Explorer Kit - 40 mm Battery - 7000003 - Includes the following parts:	
Wassara Explorer Probe 40mm Battery	1504017
Carrier Case	1003690
Field Computer + Wassara Explorer Software	1003657
Additional Battery Pack	1504032
Charger	1003696

Available Accessories	
Weight Rod Solid *	1503941
Weight Rod Eccentric	1503942
Weight Rod Solid Aluminium	1503943
Centralizer kits (3” to 16”) **	7000004-XX
Depth tracker (Bluetooth) - alternative to winch for depth tracking	7000009

** At least one weight rod needed to use centralizers*

*** Includes two complete centralizers, hook wrench*

ACCESSORIES

See our full range of drill rods, check valves, swivels and more.



DRILL RODS



Drill rods 48 - 140 mm

Friction welded, cold drawn reamless rods. Friction welding achieves a 100% metal to meal joint with parent metal properties. It is a relative low temperature process with the result being a small heat affected zone (HAZ).

Mid body material: API N-80, cold drawn

Drill rods 168 - 194 mm

Automated submerges arc welded, ensures a high quality weld with good mechanical properties.

Mid body material: API J-55, hot rolled

Joints

The tool joints are made out of micro alloyed steel. They are surface hardened (to 58-62 HRC) for extra wear resistance, lasting up to 50% longer than non-heat treated tool joints.

An O-ring is placed in the thread box to seal of any water leakage and to minimize pressure drop

GUIDED DRILL RODS



Wassara Guided Drill Rods are designed for extra straight drilling and maximum productivity optimal service life and easy to use. An O-ring is placed in the thread box to seal of any water leakage and to minimize pressure drop.

Material choices, heat treatments and production methods are all state of the art.

Wassara Drill Rods 56 – 248 mm (2” - 9 w”)

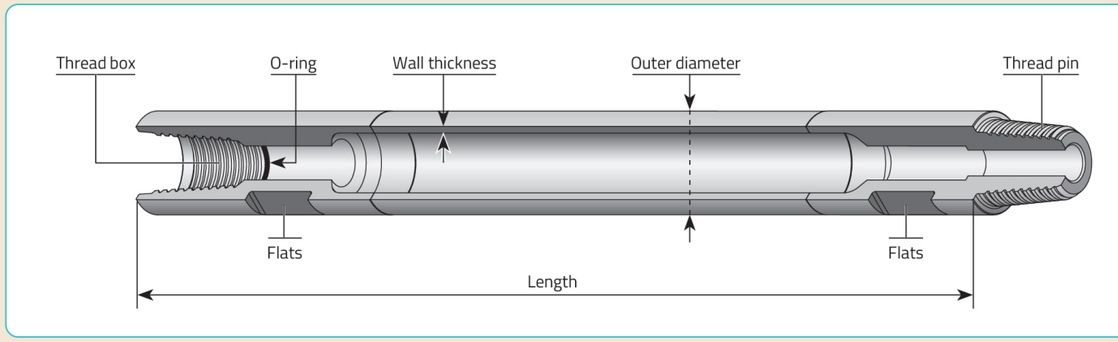
SAW welded

Mid-body: Hot rolled ST52

Tool joints (end pieces): Quenched and tempered 4140 or 4145 H modified. Nitrated.

Welded Guide ribs

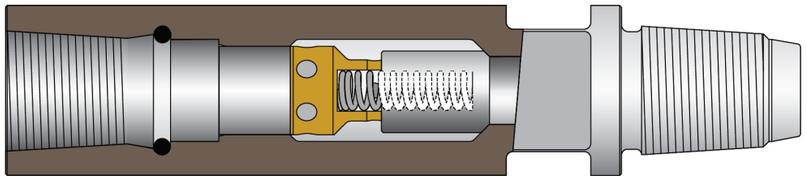
Hardfaced with DUR600



CHECK VALVES

The check valve is placed directly behind the hammer and prevents dirty water from entering the hammer through the bit when idle.

Wassara Check valves are capable of handling the high water pressure and minimizes pressure drop. They are equipped with shutter and designed for maximum productivity, optimal service life and are easy to use.

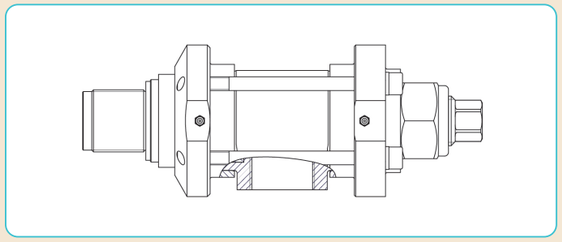


Technical data - Wassara Check valves

Hammer	Diameter	(A) Thread pin	Thread box	Length (B)	Flats	Weight	Part number
W50	50 mm (2.0”)	NC13	NC13	182 mm (7.2”)	36 mm (1.4”)	2.2 kg (4.9 lbs)	2000009
W70	63.5 mm (2.5”)	WT70*	WT70*	270 mm (8.1”)	55 mm (2.2”)	4 kg (9 lbs)	1500043
W80	76 mm (3.0”)	API 2 a” REG	API 2 a” REG	224 mm (8.8”)	65 mm (2.6”)	6 kg (13 lbs)	1000407
W100	89 mm (3.5”)	API 2 a” REG	API 2 a” REG	224 mm (8.8”)	65 mm (2.6”)	9 kg (20 lbs)	1000365
W120	114 mm (4.5”)	API 3 a” REG	API 3 a” REG	355 mm (14”)	80 mm (3.1”)	23 kg (51 lbs)	1001320
W150	140 mm (5.5”)	API 3 a” REG	API 3 a” REG	355 mm (14”)	110 mm (4.3”)	37 kg (82 lbs)	1001321
W200	182 mm (7.2”)	API 4 a” IF	API 4 a” IF	426 mm (16.8”)	140 mm (5.5”)	64 kg (141 lbs)	1500230

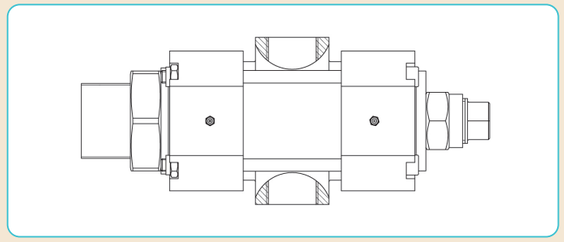


WS150



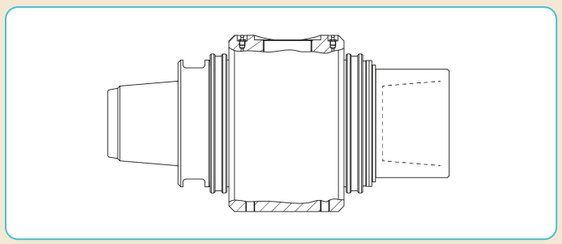
Wassara Part No.	1500072
For hammers	W50, W70, W80,W100, W120, W150
Pressure, maximum	250 bar (3625 psi)
Flow, maximum	605 l/min (160 USgpm)
Rotation, maximum	200 rpm
Weight	8 kg (17.6 lbs)
Length A	251 mm (10")
Length B	110 mm (4.3")
Thread C	M45x2 LH
Hose connection D	ISO 228-G 1½"

WS200



Wassara Part No.	1500326
For hammers	W200
Pressure, maximum	220 bar (3190 psi)
Flow, maximum	1200 l/min (317 USgpm)
Rotation, maximum	130 rpm
Weight	15 kg (33 lbs)
Length A	293 mm (112")
Length B	134 mm (5")
Thread C	M60x2 LH
Hose connection D	ISO 228-G 14"

IN-LINE SWIVELS



Technical specification	WIS50	WIS70	WIS100	WIS150	WIS200
Wassara Part No.	1002404	1002791	1002152	1002153	1002454
For hammer	W50	W70	W80, W100	W120, W150	W200
Pressure, maximum	250 bar (3 625 psi)	250 bar (3 625 psi)	250 bar (3 625 psi)	250 bar (3 625 psi)	250 bar (3 625 psi)
Flow, maximum	1 200 l/min (317 USgpm)	1 200 l/min (317 USgpm)	1 200 l/min (317 USgpm)	1 200 l/min (634 USgpm)	1 200 l/min (634 USgpm)
Rotation, maximum	200 rpm	120 rpm	100 rpm	80 rpm	56 rpm

HIGH PRESSURE HOSE KIT

To choose Wassara High Pressure Hoses is to choose high uptime. The kits are delivered assembled and ready to connect your Wassara Swivel to your Wassara High Pressure Pump.

Wassaras High Pressure Hose Kit have been tested and holds all technical approvals needed.



Technical data - Wassara High Pressure Hose Kit

Hammer	Swivel model - Pump model	Swivel connection	Hose dim.	Pump connection	Length	Weight	Part no.
W50	WS150 - WASP100	G 1"	Ø25 mm (1")	M52 x 2 DKO	20 m (65 ft)	65 kg (143 lb)	5000170
W50	WS150 - WASP100	G 1"	Ø25 mm (1")	M52 x 2 DKO	20 m (65 ft)	42 kg (93 lb)	5000171
W70/80/100	WS150 / WIS70 / WIS100 - WASP100	G 1"	Ø32 mm (1")	M52 x 2 DKO	20 m (65 ft)	50 kg (110 lb)	5000172
W120/150	WS150 / WIS150 / WASP200	G 1"	Ø38 mm (1")	M52 x 2 DKO	20 m (65 ft)	65 kg (143 lb)	5000173
W200	WS200 - WASP200	2 x G 1"	Ø32 mm (1") and Ø50 mm (2")	M52 x 2 DKO	20 m (65 ft)	140 kg (309 lb)	5000174
W200	WIS200 - WASP200	G 2"	Ø50 mm (2")	M52 x 2 DKO	20 m (65 ft)	90 kg (198 lb)	5000175

Technical data - Extension kit

Hammer	Hose dim.	Length	Weight	Part No.
W50	Ø25 mm (1")	20 m (65 ft)	42 kg (93 lb)	5000190
W70/80 W100/W200	Ø32 mm (1")	20 m (65 ft)	50 kg (110 lb)	5000191
W120/150	Ø38 mm (1")	20 m (65 ft)	65 kg (143 lb)	5000192
W200	Ø50 mm (1")	20 m (65 ft)	90 kg (198 lb)	5000193

Technical data - High Pressure hose

Hose dim.	Working pressure	Weight	Bend radius	Standard
Ø25 mm (1")	380 bar	1 520 bar	340 mm	4SH
Ø32 mm (1")	350 bar	1 400 bar	460 mm	4SH
Ø38 mm (1")	290 bar	1 160 bar	560 mm	4SH
Ø50 mm (1")	250 bar	1 000 bar	700 mm	4SH

PRODUCT SELECTION GUIDES

Wassara's Product Selection Guides provide clear, application-specific guidance for configuring complete water-powered DTH drilling systems. Based on proven field experience, they define compatible combinations of hammers, bits, rods, pumps, and accessories to ensure stable operation, straight holes, and long service life.

Use these guides as a technical reference to select the right system for your drilling conditions.



WASSARA PRODUCT SELECTION GUIDE

Updated November, 2021

	Hole Size Ø	Drill Bit Diameter, face, inserts	Wassara Hammer Model - diameter, thread	Check Valve Diameter, thread	Drill Rod ** Diameter, length, thread	Swivel Model, mounting, thread	High Pressure Hose	Water pump Requirement
W50	60 mm 2 ⅜"	Ø60mm, Flat SB* Part No 3000015	W50 - Ø56mm, NC13 Part No 1000680-56	Ø50mm, NC13 Part No 2000009	Ø48mm NC13, Part No 1500593-length	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS50, In-line, NC13 Part No 1002404	Hose kit 1 Part No 5000170	**WASP50/80** 150 l/min @ 180bar
	64 mm 2 ½"	Ø64mm, Flat SB* Part No 3000017	W50 - Ø60mm, NC13 Part No 1000680-60					
W70	82 mm 3 ¼"	Ø82mm, Speed SB* Part No 3000196	W70 - Ø78mm, WT70 Part No 1002810-78	Ø70mm, WT70 Part No 1500043	Ø63.5mm, WT70, Part No 1500594-length	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS70, In-line, WT70 Part No 1002791	Hose kit 3 Part No 5000172	**WASP80** 270 l/min @ 190bar
	89 mm 3 ½"	Ø89mm, Speed SB* Part No 3000125	W70 - Ø85mm, WT70 Part No 1002810-85					
W80	95 mm 3 ¾"	Ø95mm, Speed SB* Part No 3000011	W80 - Ø91mm, API 2 ⅜" REG Part No 1002065-91	Ø76mm, API 2 ⅜" REG Part No 1000407	Ø76mm, API 2 ⅜" REG, Part No 1500595-length	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS100, In-line, API 2 ⅜" REG Part No 1002152	Hose kit 3 Part No 5000172	
	102 mm 4"	Ø102mm, Convex SB* Part No 3000126						
W100	115 mm 4 ½"	Ø115mm, Speed SB* Part No 3000021	W100 - Ø111mm, API 2 ⅜" REG Part No 1003490-111	Ø89mm, API 2 ⅜" REG Part No 1000365	Ø89mm, API 2 ⅜" REG, Part No 1500596-length	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS100, In-line, API 2 ⅜" REG Part No 1002152	Hose kit 3 Part No 5000172	**WASP100** 360 l/min @ 190bar
	120 mm 4 ¾"	Ø120mm, Speed SB* Part No 3000029						
	127 mm 5"	Ø127mm, Convex SB* Part No 3000031						
W120.G3	130 mm 5 ⅛"	Ø130mm, Convex SB* Part No 3000013	W120 - Ø126mm, API 3 ½" REG Part No 1501600-126	Ø114mm, API 3 ½" REG Part No 1001320	Ø102mm, API 3 ½" REG, Part No 1500597-length	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS150, In-line, API 3 ½" REG Part No 1002153	Hose kit 4 Part No 5000173	**WASP120/200** 500 l/min @ 190bar
	140 mm 5 ½"	Ø140mm, Convex SB* Part No 3000059	W120 - Ø136mm, API 3 ½" REG Part No 1501600-136					
W150	165 mm 6 ½"	Ø165mm, Convex SB* Part No 3000062	W150 - Ø160mm, API 3 ½" REG Part No 1500060-160	Ø140mm, API 3 ½" REG Part No 1001321	Ø114mm, API 3 ½" REG, Part No 1500598-length	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS150, In-line, API 3 ½" REG Part No 1002153	Hose kit 4 Part No 5000173	**WASP200** 450 l/min @ 190bar
W200	216 mm 8 ½"	Ø216mm, Convex SB* Part No 3000079	W200 - Ø210mm, API 4 ½" IF Part No 1501396-210	Ø182mm, API 4½" IF Part No 1500230	Ø168mm, API 4 ½" IF, Part No 1500592-length	WS200, Top-mounted, M60x2 LH Part No 1500326 WIS200, In-line, API 4 ½" IF Part No 1002454	Hose kit 6 Part No 5000175	**WASP200** 750 l/min @ 160bar
W280	311 mm 12 ¼"	On request	W280 - Ø285mm, API 6 ⅝" REG Part No 1500590-285	Integrated check valve (ICV)	Ø273mm, API 6 5/8" REG, Part No 1003176-length	WS200, Top-mounted, M60x2 LH Part No 1500326	Hose kit 8 Part No 5000177	**WASP200 x 2** 1 400 l/min @ 160bar

* Semi Ballistic inserts

** **Standard length: 1 000mm, 1 500mm, 2 000mm, 3 000mm, 6 000mm**
Ex. 2 000mm drill rod W100: Part No 1500596-2000

14000047, Product Selection Guide. All specifications can be changed without notice.

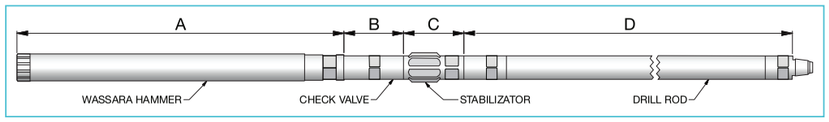
wassara **LKAB Wassara AB**, info.wassara@lkab.com, +46 771 760 100, www.wassara.com

WASSARA PRODUCT SELECTION GUIDE – CASING ADVANCING

Updated June, 2021

Casing		Hammer	Wassara Hammer	Check Valve	Stabilizator	Drill Rod	Swivel	High Pressure Hose	Water Pump
Outer diameter	Wall thickness		Model - diameter, thread	Diameter, thread	Diameter*, thread	Diameter, thread, Part.No-(length)	Model, mounting, thread	Kit, 20m	Model, performance
101.6 mm (4")	5 mm	**W70**	W70 - Ø78 mm, WT70 Part No 1002810-78	Ø70 mm, WT70 Part No 1500043	Ø(X) mm, WT70	Ø63.5 mm, WT70, Part No 1500594-(length)	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS70, In-line, WT70 Part No 1002791	High Pressure Hose Kit Part No 5000172	**WASP100D** DIESEL 360 l/min @ 200 bar Part No 5000001 *or* **WASP100E VSD** ELECTRIC 360 l/min @ 200 bar Part No 5000010
114.3 mm (4 ½")	8–10 mm	**W80**	W80 - Ø91 mm, API 2 ⅜" REG Part No 1002065-91	Ø76 mm, API 2 ⅜" REG Part No 1000407	Ø(X) mm, API 2 ⅜" REG	Ø76 mm, API 2 ⅜" REG, Part No 1500595-(length)	WS150, Top-mounted, M45x2 LH Part No 1500072	High Pressure Hose Kit Part No 5000172	
	5–6.5 mm					Ø89 mm, API 2 ⅜" REG, Part No 1500596-(length)			
127 mm (5")	8–10 mm						WIS100, In-line, API 2 ⅜" REG Part No 1002152		
139.7 mm (5 ½")	10–12.7 mm	**W100**	W100 - Ø111 mm, API 2 ⅜" REG Part No 0013000-111	Ø89 mm, API 2 ⅜" REG Part No 1000365	Ø(X) mm, API 2 ⅜" REG		WS150, Top-mounted, M45x2 LH Part No 1500072	High Pressure Hose Kit Part No 5000172	
	5–8 mm					Ø102 mm, API 2 ⅜" REG, Part No 1500597-(length)			
152.4 mm (6")	10–12.7 mm						WIS100, In-line, API 2 ⅜" REG Part No 1002152		
168.3 mm (6 ⅝")	10–12.7 mm	**W120**	W120 - Ø126 mm, API 3 ½" REG Part No 1001070-126	Ø114 mm, API 3 ½" REG Part No 1001320	Ø(X) mm, API 3 ½" REG	Ø114 mm, API 3 ½" REG, Part No 1500598-(length)	WS150, Top-mounted, M45x2 LH Part No 1500072	High Pressure Hose Kit Part No 5000173	**WASP200D** DIESEL 610 l/min @ 200 bar 800 l/min @ 160 bar Part No 5000002 *or* **WASP200E VSD** ELECTRIC 610 l/min @ 200 bar 800 l/min @ 160 bar Part No 5000011
	5.5–8 mm					Ø140 mm, API 3 ½" REG, Part No 1500598-(length)			
177.8 mm (7")	10–12.7 mm						WIS100, In-line, API 3 ½" REG Part No 1002153		
193.7 mm (7 ⅝")	5.5–14 mm	**W150**	W150 - Ø160 mm, API 3 ½" REG Part No 1500060-160	Ø140 mm, API 3 ½'" REG Part No 1001321	Ø(X) mm, API 3 ½" REG		WS150, Top-mounted, M45x2 LH Part No 1500072	High Pressure Hose Kit Part No 5000173	
219.1 mm (8 ⅝")	10–14 mm					Ø168 mm, API 4 ½" IF, Part No 1500592-(length)			
	5.5 mm					Ø194 mm, API 4 ½" IF, Part No 1500600-(length)	WIS100, In-line, API 3 ½" REG Part No 1002153		
244.5 mm (9 ⅝")	8–12.7 mm	**W200**	W200 - Ø210 mm, API 4 ½" IF Part No 1002456-210	Ø182 mm, API 4 ½" IF Part No 1500230	Ø(X) mm, API 4 ½" IF	Ø194 mm, API 4 ½" IF, Part No 1500600-(length)	WS200, Top-mounted, M60x2 LH Part No 1500326	High Pressure Hose Kit Part No 5000174	
254 mm (10")	12.7 mm					Ø219 mm, API 4 ½" IF, Part No 1500601-(length)			
273.1 mm (10 ¾")	8–20 mm							High Pressure Hose Kit Part No 5000175	
323.9 mm (12 ¾")	8–20 mm					Ø273 mm, API 4 ½" IF, Part No 1500602-(length)			

* Ø(X) = (casing inner diameter -6 mm)



Hammer (A)		Check valve (B)	Stabilizator (C)	Bottom hole assembly
W70	1,098 mm	207 mm	395 mm	1.7 m
W80	977 mm	224 mm	500 mm	1.7 m
W100	1,230 mm	224 mm	245 mm	1.7 m
W120	1,495 mm	355 mm	350 mm	2.2 m
W150	1,659 mm	355 mm	185 mm	2.2 m
W200	2,055 mm	426 mm	220 mm	2.7 m

1400092, Product Selection Guide – Casing Advancing 2021.01. All specifications can be changed without notice.

EXTRA STRAIGHT DRILLING WITH WASSARA

Wassara is well known for the water-powered drilling technology and the long straight boreholes in vertical, horizontal as well as inclined direction.

To enable Extra Straight Drilling, Wassara can offer several setups with bits, hammers and guided drill rods.

WE RECOMMEND THE FOLLOWING THREE STEPS, EACH WITH ITS OWN SETUP:

STEP 1
Start drilling with a new bit and first set of hammer and guided drill rods. Drill until the bit is worn down to the size of the hammer case. Extract the drill string and grind the bit.

STEP 2
Continue drilling with the grinded bit from Step 1 and the second set of hammer and guided drill rods. Drill until the bit is worn down to the size of the hammer case. Extract the drill string and grind the bit.

STEP 3
Continue drilling with the grinded bit from Step 2 and the third set of hammer and guided drill rods.

Keeping the tight clearness between the bit and hammer diameter is key to straight holes.

Wassara offers grinding equipment for bits.

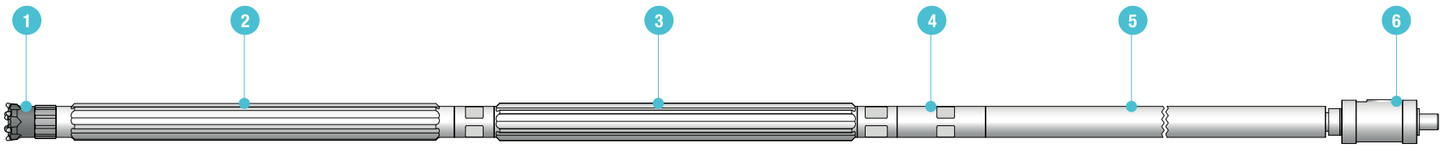
THE EXTRA STRAIGHT DRILLING SYSTEM

1. Drill bit
2. Wassara water-powered DTH hammer
3. Guided drill rod
4. Check valve
5. Drill rod
6. High pressure water swivel

BIT
Standard Wassara bits. Face and inserts design as seen in chart at next page.

HAMMERS
Extra Wear Protection (EWP) on hammer to keep the diameter intact for a longer period of time.

GUIDED DRILL RODS
Extra Wear Protection (EWP) to keep the diameter intact.



WASSARA PRODUCT SELECTION GUIDE EXTRA STRAIGHT DRILLING

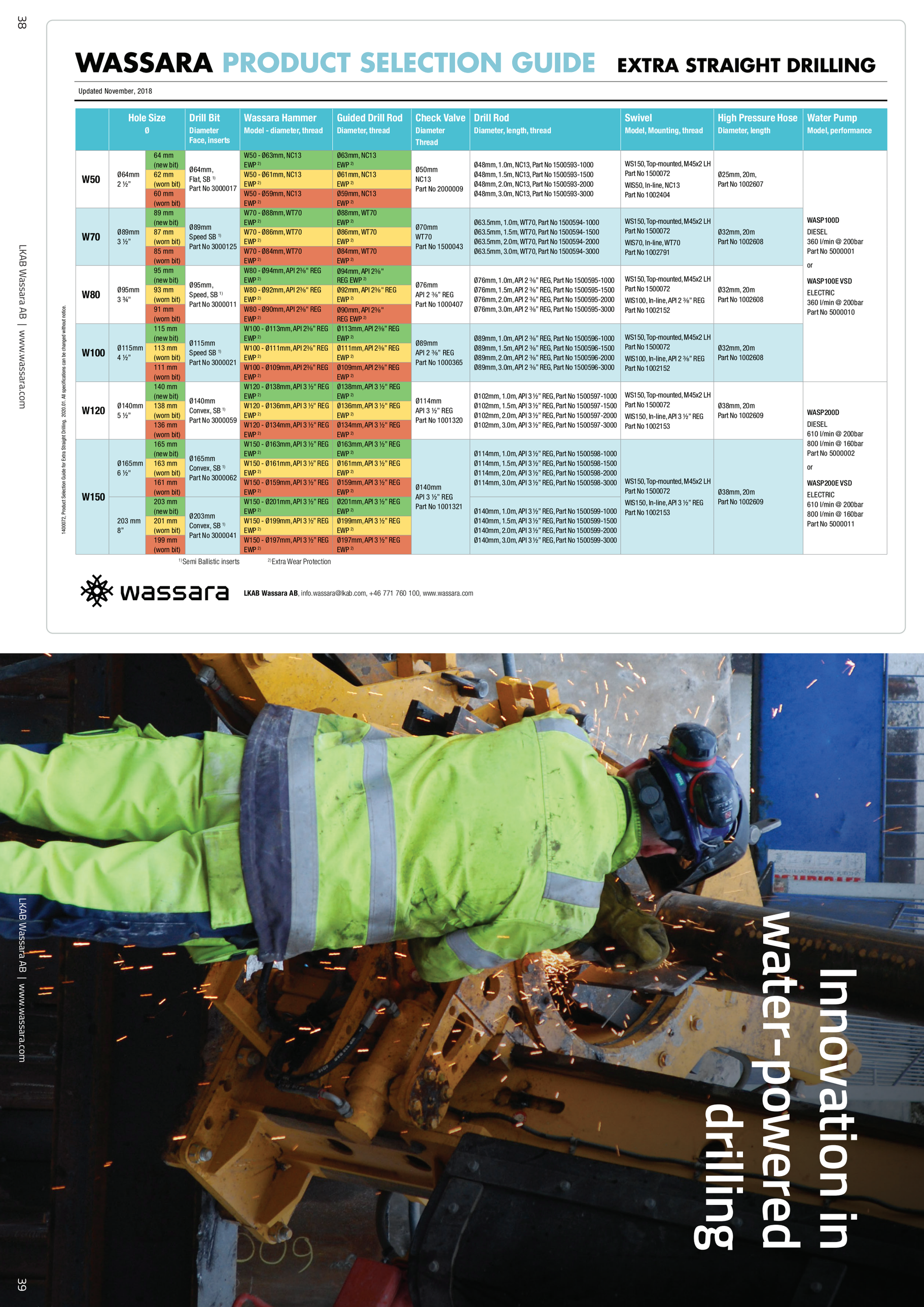
Updated November, 2018

	Hole Size Ø		Drill Bit Diameter Face, inserts	Wassara Hammer Model - diameter, thread	Guided Drill Rod Diameter, thread	Check Valve Diameter Thread	Drill Rod Diameter, length, thread	Swivel Model, Mounting, thread	High Pressure Hose Diameter, length	Water Pump Model, performance
W50	Ø64mm 2 ½"	64 mm (new bit) 62 mm (worn bit) 60 mm (worn bit)	Ø64mm, Flat, SB [1] Part No 3000017	W50 - Ø63mm, NC13 EWP [2] W50 - Ø61mm, NC13 EWP [2] W50 - Ø59mm, NC13 EWP [2]	Ø63mm, NC13 EWP [2] Ø61mm, NC13 EWP [2] Ø59mm, NC13 EWP [2]	Ø50mm NC13 Part No 2000009	Ø48mm, 1.0m, NC13, Part No 1500593-1000 Ø48mm, 1.5m, NC13, Part No 1500593-1500 Ø48mm, 2.0m, NC13, Part No 1500593-2000 Ø48mm, 3.0m, NC13, Part No 1500593-3000	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS50, In-line, NC13 Part No 1002404	Ø25mm, 20m, Part No 1002607	
W70	Ø89mm 3 ½"	89 mm (new bit) 87 mm (worn bit) 85 mm (worn bit)	Ø89mm Speed SB [1] Part No 3000125	W70 - Ø88mm, WT70 EWP [2] W70 - Ø86mm, WT70 EWP [2] W70 - Ø84mm, WT70 EWP [2]	Ø88mm, WT70 EWP [2] Ø86mm, WT70 EWP [2] Ø84mm, WT70 EWP [2]	Ø70mm WT70 Part No 1500043	Ø63.5mm, 1.0m, WT70, Part No 1500594-1000 Ø63.5mm, 1.5m, WT70, Part No 1500594-1500 Ø63.5mm, 2.0m, WT70, Part No 1500594-2000 Ø63.5mm, 3.0m, WT70, Part No 1500594-3000	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS70, In-line, WT70 Part No 1002791	Ø32mm, 20m Part No 1002608	**WASP100D** DIESEL 360 l/min @ 200bar Part No 5000001 or **WASP100E VSD** ELECTRIC 360 l/min @ 200bar Part No 5000010
W80	Ø95mm 3 ¾"	95 mm (new bit) 93 mm (worn bit) 91 mm (worn bit)	Ø95mm, Speed, SB [1] Part No 3000011	W80 - Ø94mm, API 2⅜" REG EWP [2] W80 - Ø92mm, API 2⅜" REG EWP [2] W80 - Ø90mm, API 2⅜" REG EWP [2]	Ø94mm, API 2⅜" REG EWP [2] Ø92mm, API 2⅜" REG EWP [2] Ø90mm, API 2⅜" REG EWP [2]	Ø76mm API 2 ⅜" REG Part No 1000407	Ø76mm, 1.0m, API 2 ⅜" REG, Part No 1500595-1000 Ø76mm, 1.5m, API 2 ⅜" REG, Part No 1500595-1500 Ø76mm, 2.0m, API 2 ⅜" REG, Part No 1500595-2000 Ø76mm, 3.0m, API 2 ⅜" REG, Part No 1500595-3000	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS100, In-line, API 2 ⅜" REG Part No 1002152	Ø32mm, 20m Part No 1002608	
W100	Ø115mm 4 ½"	115 mm (new bit) 113 mm (worn bit) 111 mm (worn bit)	Ø115mm Speed SB [1] Part No 3000021	W100 - Ø113mm, API 2⅜" REG EWP [2] W100 - Ø111mm, API 2⅜" REG EWP [2] W100 - Ø109mm, API 2⅜" REG EWP [2]	Ø113mm, API 2⅜" REG EWP [2] Ø111mm, API 2⅜" REG EWP [2] Ø109mm, API 2⅜" REG EWP [2]	Ø89mm API 2 ⅜" REG Part No 1000365	Ø89mm, 1.0m, API 2 ⅜" REG, Part No 1500596-1000 Ø89mm, 1.5m, API 2 ⅜" REG, Part No 1500596-1500 Ø89mm, 2.0m, API 2 ⅜" REG, Part No 1500596-2000 Ø89mm, 3.0m, API 2 ⅜" REG, Part No 1500596-3000	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS100, In-line, API 2 ⅜" REG Part No 1002152	Ø32mm, 20m Part No 1002608	
W120	Ø140mm 5 ½"	140 mm (new bit) 138 mm (worn bit) 136 mm (worn bit)	Ø140mm Convex, SB [1] Part No 3000059	W120 - Ø138mm, API 3 ½" REG EWP [2] W120 - Ø136mm, API 3 ½" REG EWP [2] W120 - Ø134mm, API 3 ½" REG EWP [2]	Ø138mm, API 3 ½" REG EWP [2] Ø136mm, API 3 ½" REG EWP [2] Ø134mm, API 3 ½" REG EWP [2]	Ø114mm API 3 ½" REG Part No 1001320	Ø102mm, 1.0m, API 3 ½" REG, Part No 1500597-1000 Ø102mm, 1.5m, API 3 ½" REG, Part No 1500597-1500 Ø102mm, 2.0m, API 3 ½" REG, Part No 1500597-2000 Ø102mm, 3.0m, API 3 ½" REG, Part No 1500597-3000	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS150, In-line, API 3 ½" REG Part No 1002153	Ø38mm, 20m Part No 1002609	**WASP200D** DIESEL 610 l/min @ 200bar 800 l/min @ 160bar Part No 5000002 or **WASP200E VSD** ELECTRIC 610 l/min @ 200bar 800 l/min @ 160bar Part No 5000011
W150	Ø165mm 6 ½"	165 mm (new bit) 163 mm (worn bit) 161 mm (worn bit)	Ø165mm Convex, SB [1] Part No 3000062	W150 - Ø163mm, API 3 ½" REG EWP [2] W150 - Ø161mm, API 3 ½" REG EWP [2] W150 - Ø159mm, API 3 ½" REG EWP [2]	Ø163mm, API 3 ½" REG EWP [2] Ø161mm, API 3 ½" REG EWP [2] Ø159mm, API 3 ½" REG EWP [2]	Ø140mm API 3 ½" REG Part No 1001321	Ø114mm, 1.0m, API 3 ½" REG, Part No 1500598-1000 Ø114mm, 1.5m, API 3 ½" REG, Part No 1500598-1500 Ø114mm, 2.0m, API 3 ½" REG, Part No 1500598-2000 Ø114mm, 3.0m, API 3 ½" REG, Part No 1500598-3000	WS150, Top-mounted, M45x2 LH Part No 1500072 WIS150, In-line, API 3 ½" REG Part No 1002153	Ø38mm, 20m Part No 1002609	
	203 mm 8"	203 mm (new bit) 201 mm (worn bit) 199 mm (worn bit)	Ø203mm Convex, SB [1] Part No 3000041	W150 - Ø201mm, API 3 ½" REG EWP [2] W150 - Ø199mm, API 3 ½" REG EWP [2] W150 - Ø197mm, API 3 ½" REG EWP [2]	Ø201mm, API 3 ½" REG EWP [2] Ø199mm, API 3 ½" REG EWP [2] Ø197mm, API 3 ½" REG EWP [2]		Ø140mm, 1.0m, API 3 ½" REG, Part No 1500599-1000 Ø140mm, 1.5m, API 3 ½" REG, Part No 1500599-1500 Ø140mm, 2.0m, API 3 ½" REG, Part No 1500599-2000 Ø140mm, 3.0m, API 3 ½" REG, Part No 1500599-3000			

[1] Semi Ballistic inserts [2] Extra Wear Protection

1400072, Product Selection Guide for Extra Straight Drilling. 2020.01. All specifications can be changed without notice.

wassara **LKAB Wassara AB**, info.wassara@lkab.com, +46 771 760 100, www.wassara.com



SERVICES

Wassara Services are designed to support long hammer life, stable performance, and predictable drilling results throughout the full equipment lifecycle.



Through structured maintenance solutions, on-site technical support, and dedicated service centers, we help ensure reliable operation and sustained productivity in demanding drilling applications.

Our services are based on field experience, engineering expertise, and a deep understanding of water-powered DTH technology.

HAMMER SERVICE KITS

Service kits are available for all Wassara-hammer sizes.

Regular servicing using original service kits is essential to maintain hammer longevity, stable performance, and predictable drilling results.

Correct service intervals reduce internal wear, prevent secondary damage to critical components, and help maintain penetration rate and operating pressure over time.

Developed to allow customers to easily purchase complete, ready-made service kits, supporting consistent maintenance practices and ensuring good functionality and productivity.

For more detailed information, see the hammer-specific Product Data Sheet at:

https://www.wassara.com/our-products/hammers/

GLOBAL ON-SITE SUPPORT

LKAB Wassara perform various Technical Services all around the globe, such as: On-site drilling start-up, Borehole Surveying, Hammer Service, and more.

LKAB Wassara also provides service for all water-powered Hammers in the LKAB Mines in Malmberget and Kiruna, this through our Drilling Technology Center located in Malmberget.

IN-HOUSE HAMMER SERVICE

Available in Scandinavia, Italy and North America.

We offer full Hammer services in these regions, ensuring maintained longevity and productivity.

We perform Root Cause Analysis on any known issues by our experienced Service and Engineering-personal, and we have the ability to design and manufacture solutions quickly.

CONTACT US

Contact Wassara for technical support, product guidance, and service inquiries.

Our specialists are ready to support your drilling projects.

Jan Carlsten

CEO

+46 70 342 27 24

jan.carlsten@lkab.com

Antti Lahdelma

Marketing and Sales Director & Regional Manager – North and South America

+46 70 288 23 55

antti.lahdelma.wassara@lkab.com

Johan Knöös

Regional Manager –
Northern Europe and South Africa

+46 70 275 35 50

johan.knoos.wassara@lkab.com

Igor Schaber

Regional Manager –
Central and Southern Europe

+46 70 247 34 14

igor.schaber.wassara@lkab.com

Lars Gellerhed

Product Manager & Export Sales –
Africa and Asia

+46 70 377 34 22

lars.gellerhed.wassara@lkab.com



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