



Drill rigs of the UBV family

Effective drilling solutions

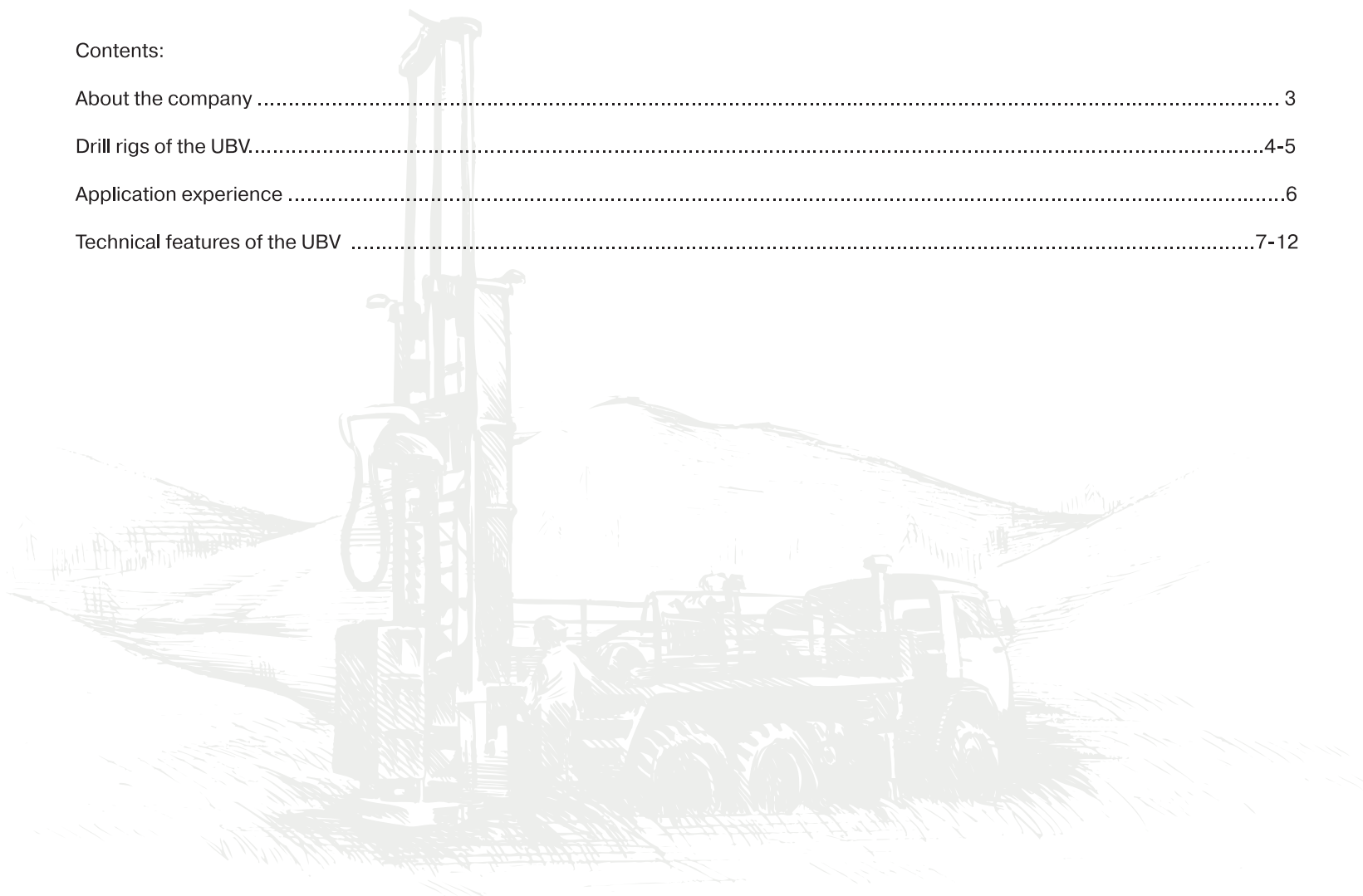




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LLC Geomash manufactures a wide number of universal drilling rigs for solution of tasks in the field of drilling of exploration wells, seismic exploration, engineering researches, drilling of wells of different function when performing construction works, and also hydrogeological wells.

For more than 130-year of the company history a lot of things changed, invariable was only one — our aspiration to create drilling equipment capable to provide effective drilling for our partners.

The "Geomash" quality management system conforms to the ISO 9001:2008 standard concerning design and production of mobile drilling rigs, spare parts and boring tools.

Detailed knowledge of technological drilling processes and problems which our buyers face in the course of drilling give the chance to create the drilling rigs which are most adapted for the geological conditions and tasks solved by our buyers.

Today the company has more than 1000 employees, production sites are located in the cities of Shchigra, Vladimir (Russia) and Nordkhauzen (Germany).

In 2011 "Lutz-Kurth" - the German producer specializing on production of small-sized boring equipment and boring carriages became a part of the Geomash company. "Lutz-Kurth" motto is to make machines small on dimensions and highly productive in work.

Companies of various activity profile successfully operate with "Geomash" products.

Largest geophysical organizations are constant partners of Geomash.

Among them are gas-and oil-extracting enterprises, such as JSC Gazprom, Lukoil, Transneft, Rosneft and others.

Our delivery geography isn't limited to the territory of the Russian Federation and includes countries of the Near and Far-abroad countries.



We seek to turn our knowledge and experience in the area of development and production of drilling rigs into competitive advantages of our partners.



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UBV Drill rigs

UBV-318, UBV-320 drilling rigs with a hydraulically driven power swivel are intended for drilling of hydrogeological, geological exploration, degassing and technical wells in grounds of the XII drilling category.

The plant provides:

- rotary core and non core drilling with fluid circulating / air flush technology,
- rotary drilling with reverse air circulation - RC technology (UBV-320) ,
- DTH drilling of wells with a diameter up to 490 mm.

UBV class drill rigs are mounted on a special automobile chassis KAMAZ-6522 (Euro 4) with a 6×6 wheel base. The drilling rig drive is carried out from the car engine via PTO.

For simplification of RIH/POOH production operations the rigs are supplied with threaded connections drillpipe breaker, single-pipe loader and the utility hoist with a telescopic cargo arrow.

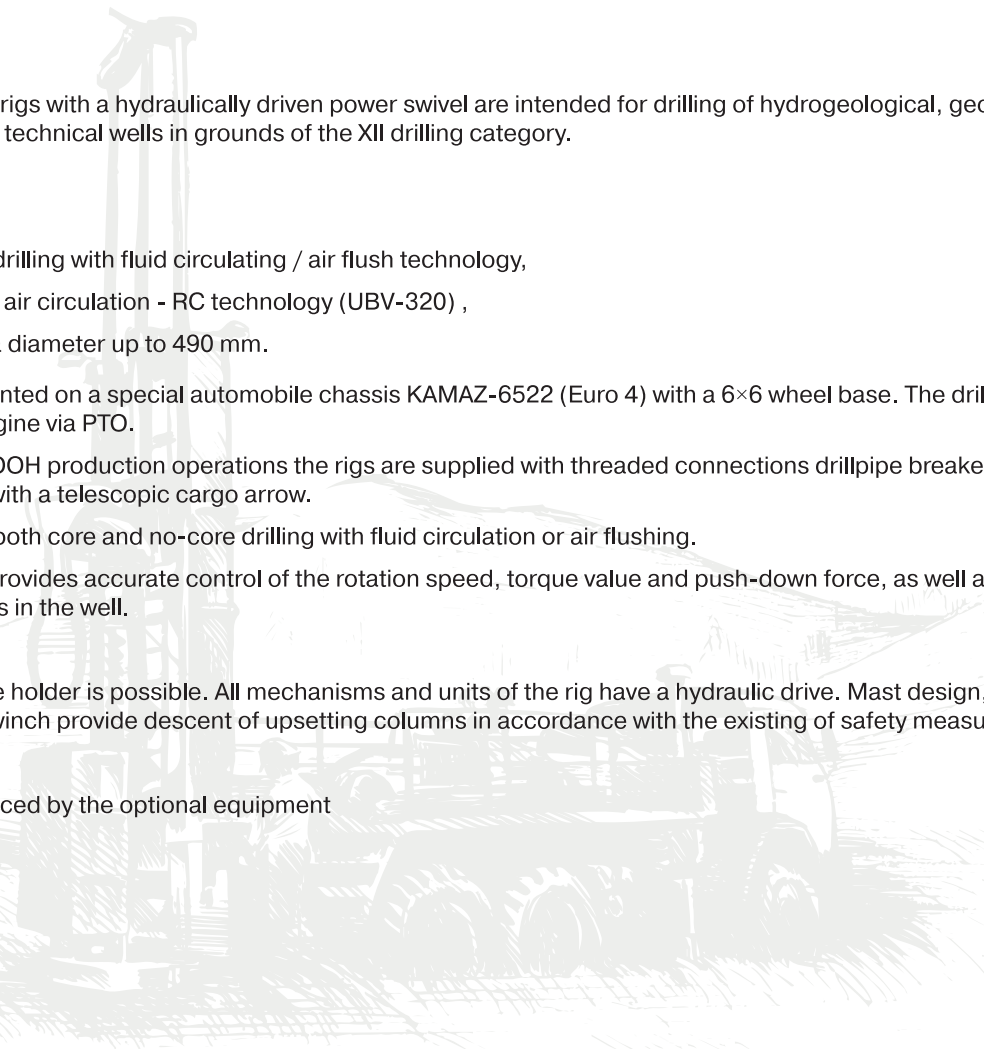
Basic equipment provides both core and no-core drilling with fluid circulation or air flushing.

Electronic control system provides accurate control of the rotation speed, torque value and push-down force, as well as allows to control the occurrence of accidents in the well.

Optionally delivery of a tube holder is possible. All mechanisms and units of the rig have a hydraulic drive. Mast design, existence of a crown block and the main winch provide descent of upsetting columns in accordance with the existing of safety measures requirements.

Performance can be enhanced by the optional equipment

- Hydraulic pipe holder
- Breakout wrench
- Pipe loader



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| Technical characteristics | |
|-------------------------------------------------|------------|
| Power take, kW | 235 |
| Maximum torque, Nm (kgm) | 8000 (800) |
| Rotator feed force, kgf: | |
| - up | 20000 |
| - down | 6000 |
| Boring head feed rate, m / s: | |
| - up | 0.6 |
| - down | 0.5 |
| Feed stroke, mm | 7000 |
| Rotator spindle rotation frequency, rpm | 0 - 330 |
| Drill pipes supply manipulator | |
| - mechanism loading capacity (max), kg | 250 |
| Boring table: | |
| - maximum diameter of the clamped pipes, mm | 451 |
| Winch: | |
| - load capacity on a straight rope, kg | 10000 |
| GS-16 generator: | |
| - power, kW | 16 |
| - tension, V | 240/400 |
| Conditional drilling depth, m: | |
| - boring pipes d=85 of mm | 800 |
| - boring pipes d=114 of mm | 500 |
| Fuel consumption on 1 running hour , ltr | 32 |
| Conditional drilling speed, m/h: | |
| - with fluid circulating | 24 |
| - with submersible pneumatic impact tools (DTH) | 60 |





Application experience

Drilling of wells for anode grounding, pile, water wells. Complex of works on drilling and installation of the grounding equipment, pile fields.

Performance of a complex of works on drilling of 4 stowage wells from a terrestrial surface to a mark minus 64 m, drilling of a cable well. Initial diameter 780 mm, drilling on breeds of the X category – 130 m in each well for 426th column of pipes casing.

Works on construction of a ventilating well. Initial diameter of drilling 1420 mm, drilling on breeds of the X category – 30 m in each well for casing of the 630th column of pipes.

Works on drilling of a ventilating well. Initial diameter of drilling 880 mm, drilling on breeds of the X category – 50 m in each well for the 426th column of pipes upsetting.

Performance of a complex of works on drilling of 3 stowage wells from a terrestrial surface to a mark of minus 58,3 m the Initial diameter of drilling 780 mm, drilling on breeds of the X category – 138 m in each well for the 273 columns of pipes upsetting

Drilling of freezing wells of 170 m in depth, initial diameter of drilling 394.5 mm.

Mining wells with the initial diameter of drilling 500mm with a depth of 1200 m under a filter column with a diameter of 127 mm.

Wells on mineral waters for the baleontologic purposes of 920 m in depth. Initial diameter is 426 mm under a filter column with a diameter of 89 mm.





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Technical features

- All rig working bodies have a hydraulic drive thanks to what possibility of additional equipment of extra processing without entering considerable changes into the drilling rig design is reached, labor input of management in comparison with the drilling rigs having mechanical transmission is reduced.
- Electro hydraulic control of the hydraulic system provides precise setup and operating control of rotation frequency and torque value when drilling.
- The mobile rotator with a hydraulic drive has a through passage spindle providing possibility of installation of an grease-retainer for drilling on the RC technology.
Optionally a clamping hydro shell can be mounted on a boring pipe rotator spindle.
- The design of the mobile rotator carriage provides side shift of the mobile rotator for release of the wellhead during work with the winch.
- Installation on a standard set is equipped with a main winch with a loading capacity of 10 tons for hoisting operations and landing of upsetting columns.
- The workplace of the assistant driller is organized on the P-shaped folding platform fixed at the drilling rig stern.
- Option delivery of the auxiliary winch with a rotary arrow for mechanization of boring pipes building and loading and unloading works is possible.
- For realization of DTH drilling in difficult geological conditions installation can be completed with a lubricator for submersible pneumohock cars and the equipment for work with liquid-gas mixture
- A wide number of adaptations and accessories delivered on demand provide main operations with various types of the boring tool and mechanization of auxiliary operations.

The drilling rig – boring opportunities which allow to solve above-mentioned problems has to have the following technical characteristics:

- chassis – semi-trailer (with a single lead);
- overall dimensions in transport position (allow to move on public roads without dismantle of the main knots) (a weight distribution on axes is set in accordance with traffic regulations);
- loading capacity on a hook of the auxiliary winch – 3 t.
- loading capacity on a rotator spindle – 40 t.
- mast height – has to allow fastening of a well pipes up to 12 meters long.
- mast with a support on soil by means of hydraulic cylinders
- initial drilling diameter – 1500mm
- rotator which is removed (folded) with possibility of an inclination from a vertical
- rotator torque



- hydroclip of the rotator has to ensure functioning with boring bars (pipes) with a diameter (external) from 85mm to 190 mm and have shift adapters (contact tube) for the corresponding carvings
- lower hydroclip of a desktop
- on mast fastening
- clamping diameter rods (tubes) of 85 mm to 350 mm.

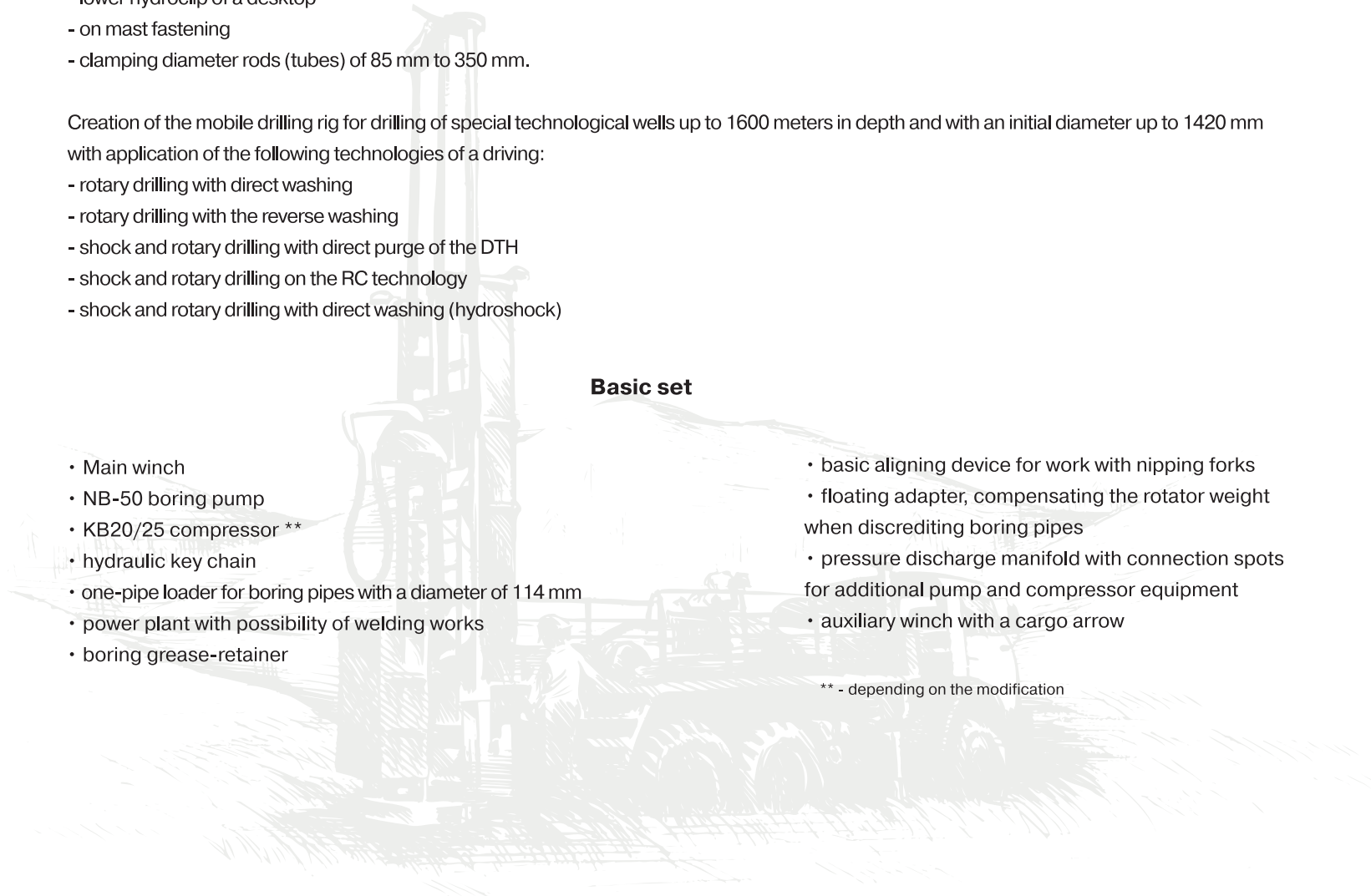
Creation of the mobile drilling rig for drilling of special technological wells up to 1600 meters in depth and with an initial diameter up to 1420 mm with application of the following technologies of a driving:

- rotary drilling with direct washing
- rotary drilling with the reverse washing
- shock and rotary drilling with direct purge of the DTH
- shock and rotary drilling on the RC technology
- shock and rotary drilling with direct washing (hydroshock)

Basic set

- Main winch
- NB-50 boring pump
- KB20/25 compressor **
- hydraulic key chain
- one-pipe loader for boring pipes with a diameter of 114 mm
- power plant with possibility of welding works
- boring grease-retainer
- basic aligning device for work with nipping forks
- floating adapter, compensating the rotator weight when discrediting boring pipes
- pressure discharge manifold with connection spots for additional pump and compressor equipment
- auxiliary winch with a cargo arrow

** - depending on the modification



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Boring pumps

| Pump parameters | NB-50 | NB-80 |
|------------------------------------|-----------|-----------|
| Volume feed, m ³ / hour | 39,6 | 50,4 |
| Pressure max, MPa | 6.3 | 10.0 |
| Type | piston | piston |
| Power, kW | 50 | 80 |
| Drive | hydraulic | hydraulic |
| Weight, kg | 1100 | 1300 |

| Parameters of the compressor equipment | Compressor station KV 20/25 (Chelyabinsk compressor plant) |
|-------------------------------------------|---------------------------------------------------------------|
| Volume productivity, m ³ / min | 20 |
| Nominal pressure, MPa | 2.5 |
| Power consumption, kW | 193 |
| Drive | Deutz TCD 2013L 06 4V diesel engine |
| Engine power, kW | 227 |
| Mass of compressor station, kg | 3100 |

Additional equipment

- boring pipes handling unit ***
- boring and upsetting pipes tube holder ***
- boring pipes hydrocartridge***
- boring pump NB-80 (instead of the pump NB-50)
- hydraulic drillpipe breaker
- Lubricator with an injection system to the discharge manifold
- onboard boring pipes rack
- gas-liquid mixture equipment (dispensing pump with a foaming system)

*** - installed at the request of the customer, instead of the single pipe loader, support-centering device and auxiliary winches with a cargo arrow



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RC technology (UBV-320)

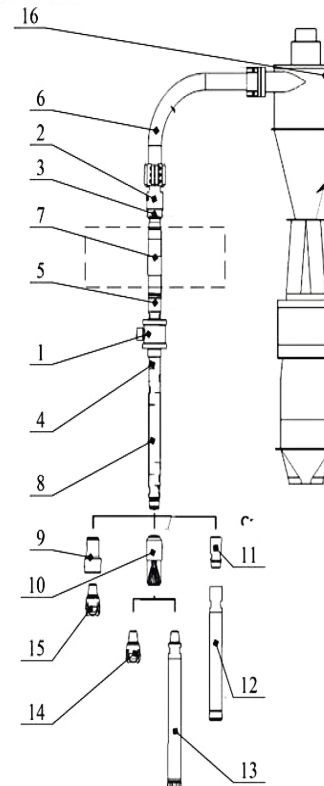
The UBV-320 drilling rig allows to realize the technology of reverse circulation (RC) up to the depth of 300 m. The RC technology is actively applied thanks to the highest mechanical speed of drilling worldwide. In recent years the RC technology received active use in the Russian market.

Set contents

Included into the equipment set for return circulation hammer drilling are the following components:

- 1 - discharging retainer
 - 2 - grease-retainer
 - 3 - an adapter from a rotator spindle to a grease-retainer
 - 4 - an adapter from a discharging retainer to a column of boring pipes
 - 5 - adapter from a rotator spindle to a discharging retainer
 - 6 - grease hose
 - 7 - mud tube
 - 8 - double boring pipes with a diameter of 140 mm
 - 9 - adapter on a rolling drilling bit
 - 10 - Inter Change adapter on a standard pneumatic impact tool, or a rolling drilling bit
 - 11 - DTH RC Sub adapter from the boring tube on a pneumatic impact tool ring
 - 12 - ring pneumatic impact tool of DTH RC with a chisel for reverse circulation
 - 13 - a standard pneumatic impact tool with a chisel for direct purge
 - 14 and 15 - rolling drilling bit
 - 16 - cyclonic type grease/dust collector
- Also removable technological adapters for purge of the central channel are a part of the land equipment
- The drilling and rock cutting tool set includes:

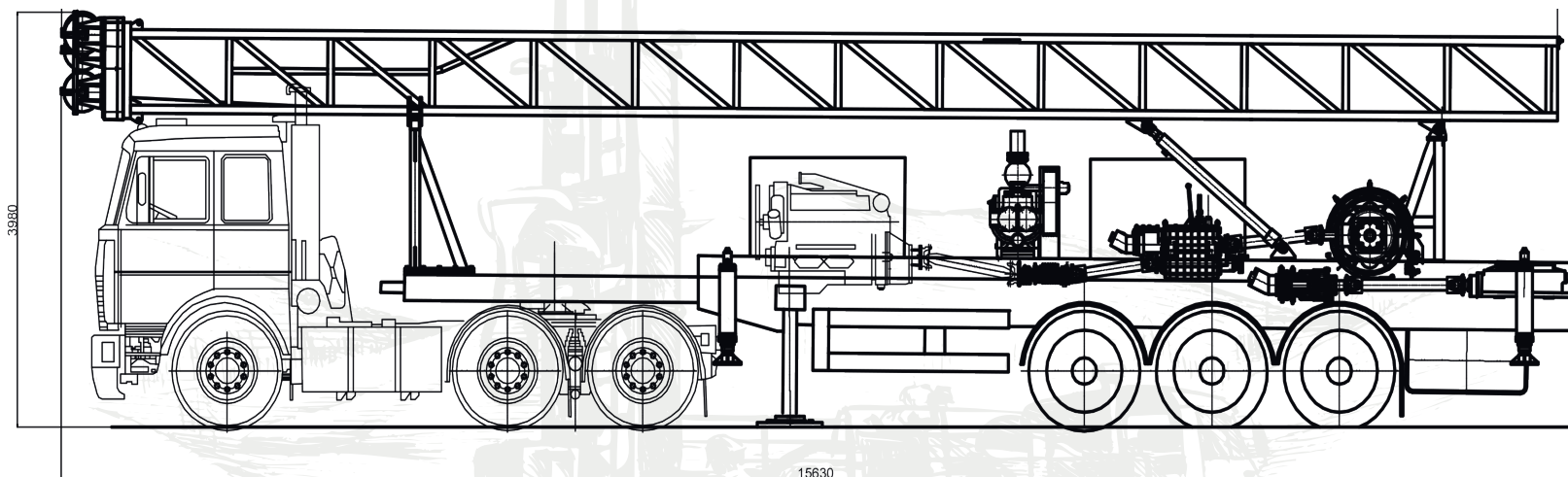
Reverse circulation found special application in exploratory drilling thanks to fast receiving of soil samples, thereby intensifying process of prospecting works.





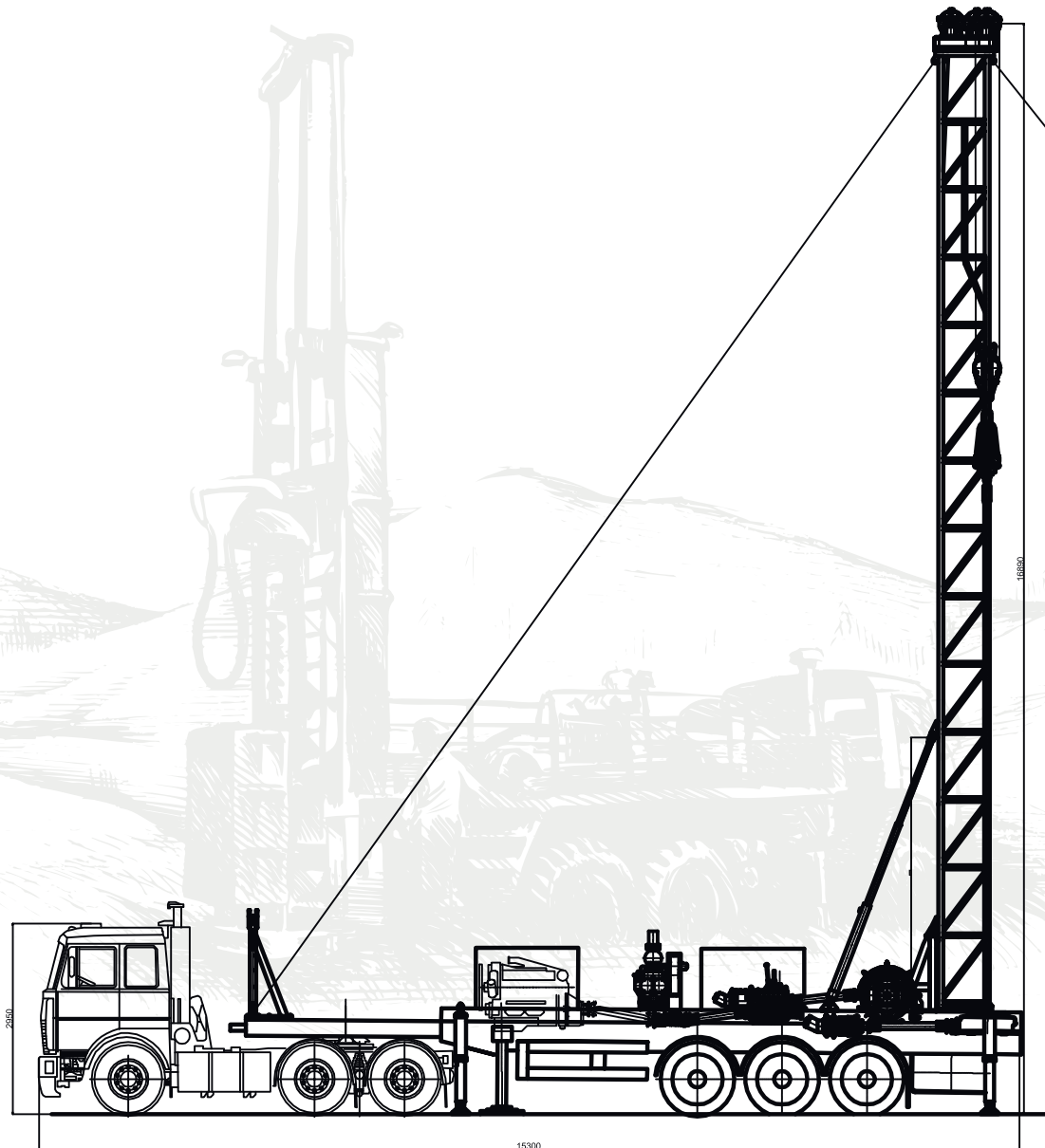
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Overall dimensions





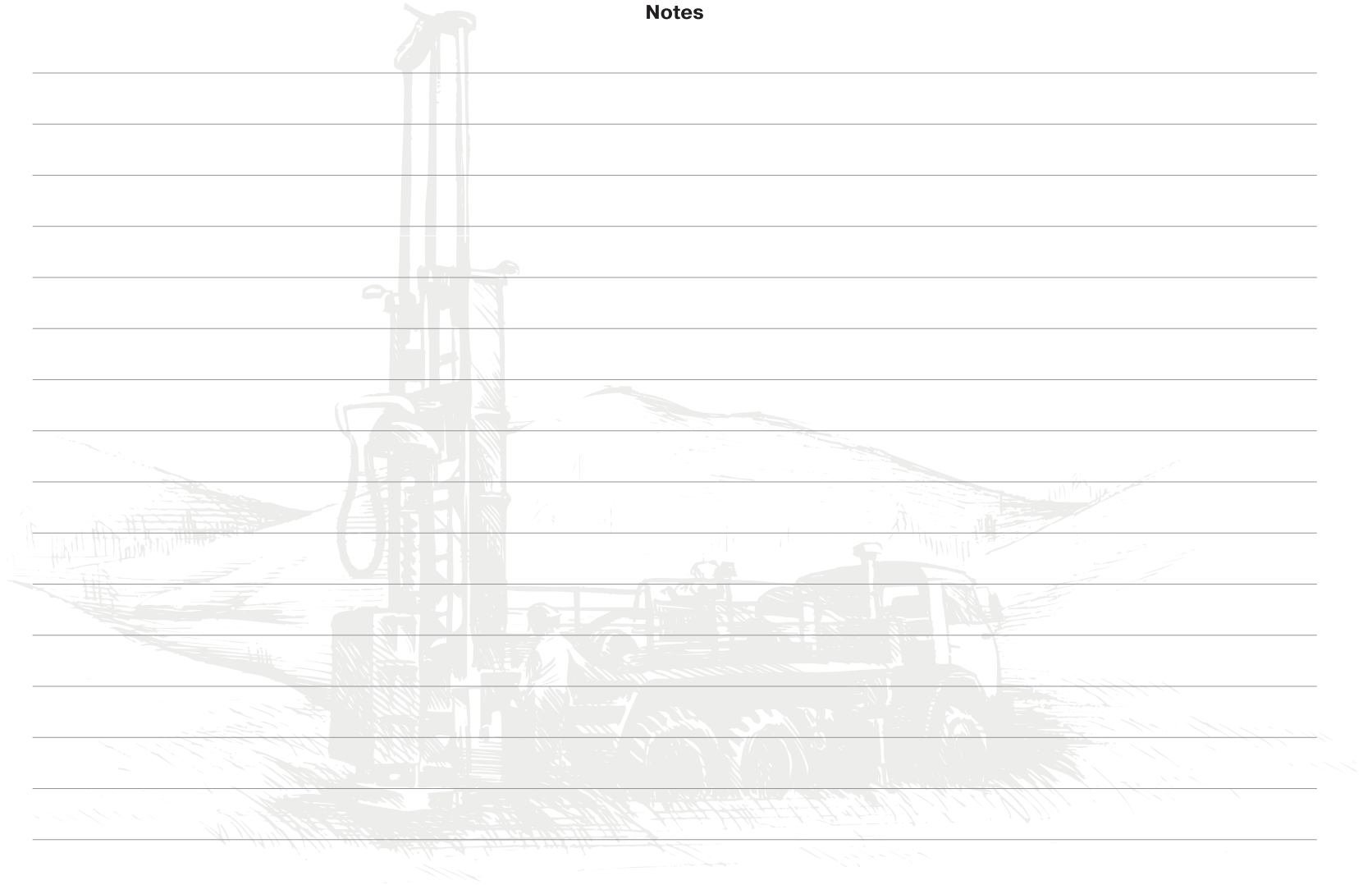
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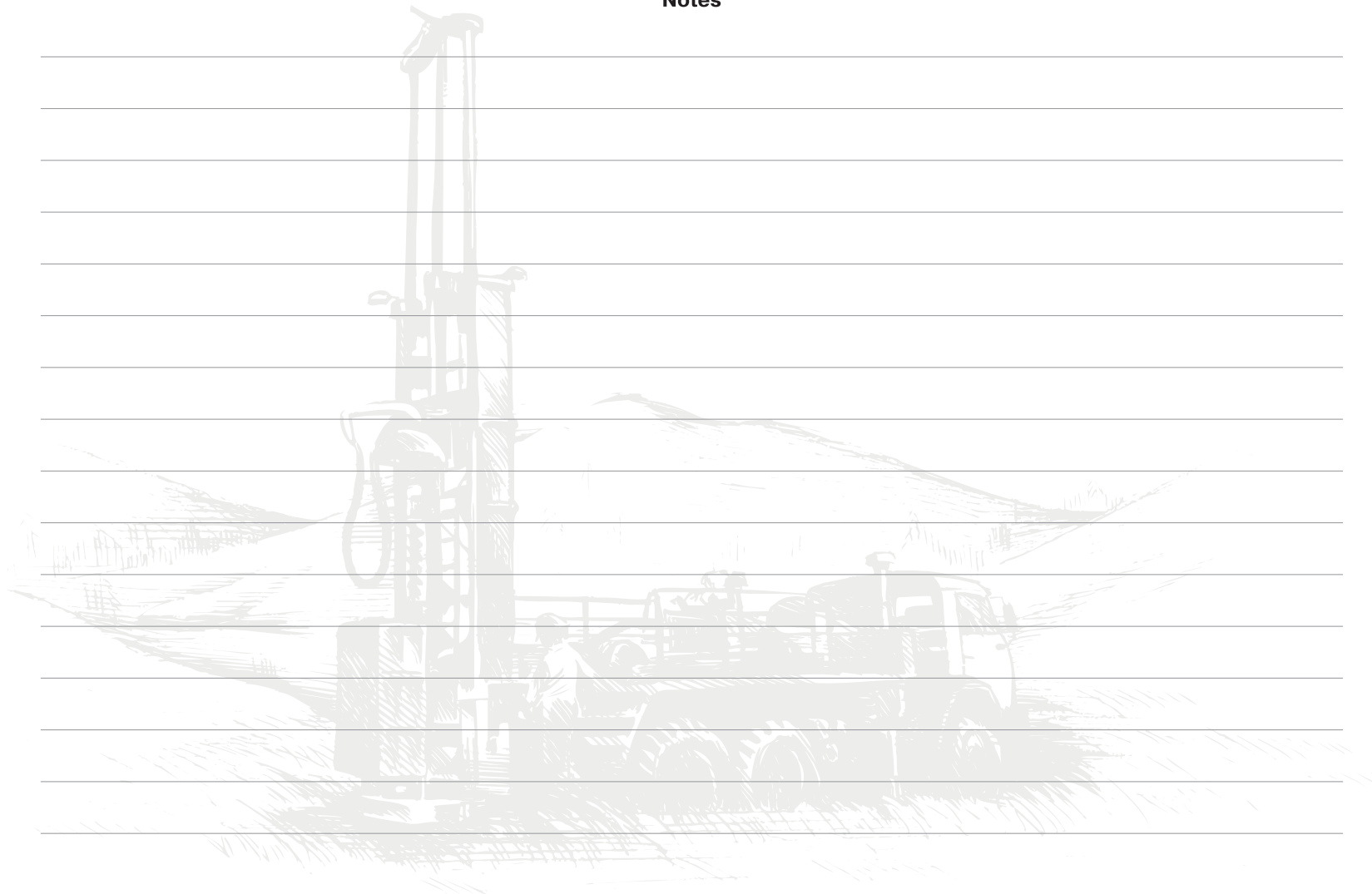
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