

1 NEW MOBILE DRILLING AND WORKOVER RIG

For Oil, Gas and Water drilling.

Made in Germany.

As in attached technical description.

Preis / Price: € 4.900.000,-- EXW Germany, without packing.

Delivery time: to be agreed.

Warranty: 12 month.

Origin: Germany.

Pictures: attached.

Front and Back view

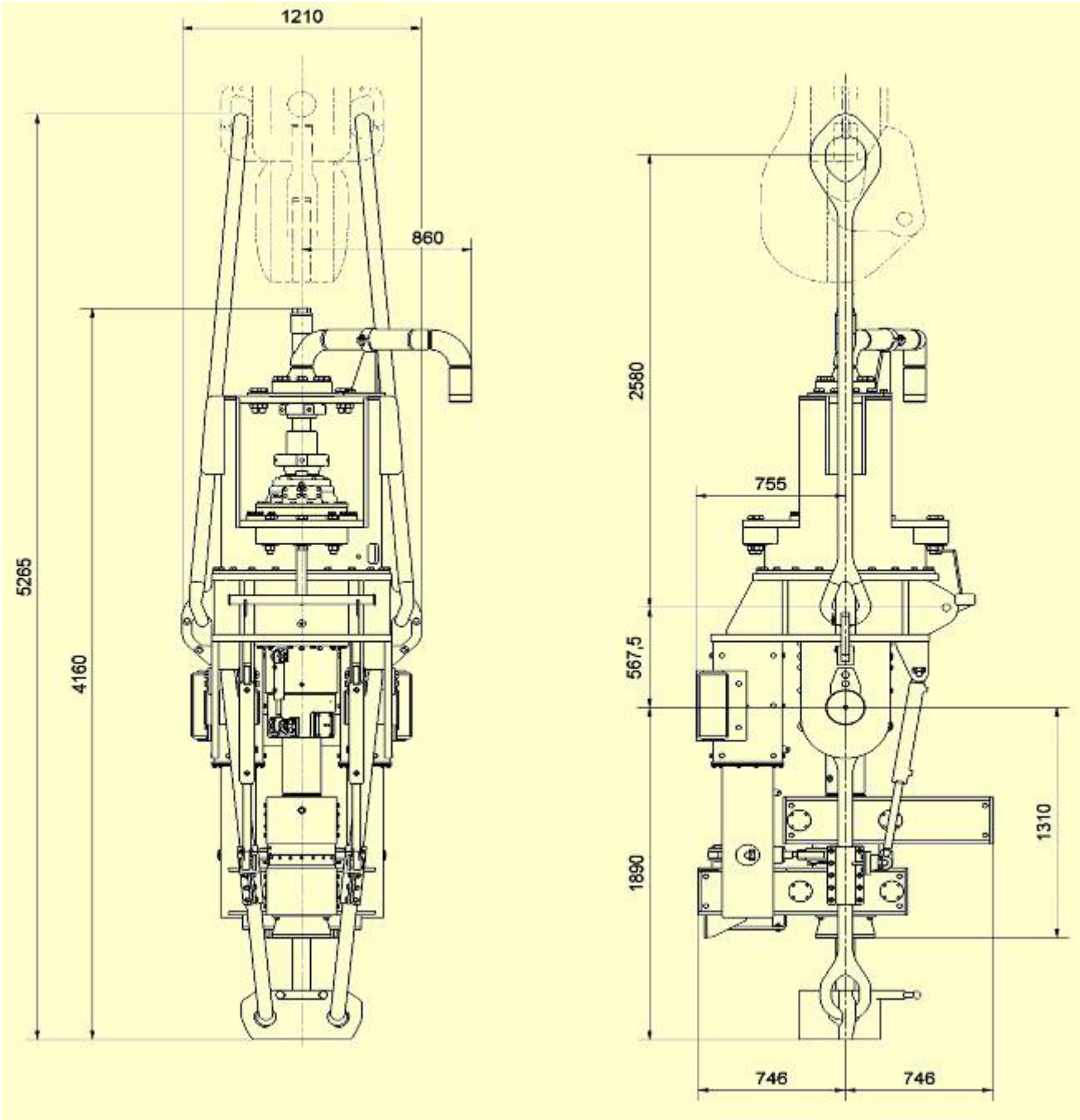


Working platform and monkey board



11.1 Data of the Power swivel

11.1.1 Dimensions



Workover and drilling Rig Type TB 1800 V

Hook load 180 ton

1. Carrier Truck

- make: Daimler Benz
- type: ACTROS 4150 AK, 8 x 8/4 four-wheel-drive
- frame elongation, lower set drivers cabin, 6-axles chassis frame (12x8/8 after modification)
 - varnishing:
 - drivers cabin: MB 5517 blue
 - chassis frame: MB 7350 grey
 - wheels: MB 9205 silver
- tires suitable for off-road application
- motor V8, 370 kW / 503 HP, EUR-Norm 3
- recharger for accumulators

Maximum Axle Loads:

1. axle, driven, steered:	9,00	t
2. axle, driven, steered:	9,00	t
3. axle, steered:	9,00	t
4. axle, driven:	16,00	t
5. axle, driven	16,00	tT
6. axle, steered:	12,00	t

Dimensions:

length:	appr.	20,00	m
width:	appr.	2,85	m
height w/o monkey board:.	appr.	4,00	m
height incl. monkey board:.	appr.	4,30	m
G. V. W.:	appr.	72,00	t

Lifting Capacity

Hook load, exceptional:	180,00	t
Hook load, regular:	160,00	t
Shearing:	5	-fold
Crown load, exceptional:	235,00	t

2. Construction of drilling rig

2.1 Main frame

- main frame fixed on chassis to take all components
- 6 hydraulic cylinders with mechanical safety device (to lock and unlock)
 - 4 x around mast area, mechanically locked
 - 2 x behind second front axle
- two walkways with foot plates and railings alongside the carrier, incl. ladder
- 2-components-varnish coating: blue (RAL 5017)
- 6 suspension points, for joints to the drive on frame

2.2 Mast

- telescoping mast, length appr. 38 m in drilling position, hydraulically raised with two (2) cylinders, fixed on main frame, mechanically bolted
- telescoping system by rope winch: traction force 5 tons, rope length / diameter: 100 m / 16 mm
- mast high for double drill pipes 18m length,
- incl. monkey board, mechanically operated by auxiliary winch
- 3 positions for monkey board at the mast,
- ladder incl. safety climbing device, two wires above monkey board
- setting up and down of mast possible up to 10 m/s (wind force)
- deadline anchor, storm anchors (4 pcs.) for guy lines,
- guy lines and turn buckles, rope and pulleys with counterweight for rotary tong
- raising lines, stroke rope
- single stand pipe of 4" LP incl., hammer union WECO 4"/1002 incl. manifold
- 2-components-varnish coating: mast – white (RAL 9001) / sheaves – red (RAL 3000)
- derrick's man escape, Geronimo safety slide, self-braking type incl. T-bar seat, wire lines and controls
- steel spare drum for rope for the main winch
- spare rope length / diameter: 540 m / 1 ¼" (total = 1.000 m in rig and as spare)
- hook eye at crown hang up hydraulic clamp 10 t, in driving direction, right
- monkey board designed for racking of 2.500 m drill pipes 5" and 6 pcs. drill collars 8 ½"
- free height in the mast (from hook on top - to rotary table): 20 m
- electrical supply connection: 230 V/ 400V, 50 Hz
- electrical installation as ex – proof,

2.3 Substructure

Rotary Table, with master square bushing

- Rotary table, size: 27 ½ “
- Upset load: 320 t
- hydraulically driven, incl. gear, driveshaft and hydraulic motor
- torque limitation adjustable by pre-selection
- mouse hole and kelly hole located directly behind rotary table

working platform incl. pony trestle

- operating area, appr.: 6,00 x 8,00 m
- footprint area, appr.: 6,00 x 12,00 m
- height, appr.: 6,00 m
- free height under rotary table: 5,20 m
- railing (retractable), height: 2,50 m in transport box
- racking capacity: 10 – 12 t / m²
- stock ramp, length: 18,00 m
- height: 1,20 m
- pipe rack, 10 trestles, length: 2,50 m each
- height: 1,20 m
- sliding ramp: platform to stock ramp Grooved for pipe movement
- stairs to working platform: 3 pcs. (1 to pipe rack)
- holding pile for machine clamp, with break out cylinder, traction rope 2 pcs. Force max. 15t
- casing cushion pad (2 pcs = 1 set) with hardwood covered
- doors to working platform: 3 pcs.
- 1 ahead to the right and 1 to the left of the rig, 1 to pipe rack / sliding ramp
- pipe-returning-winch, incl. electro-motor, connection cable, panel, mounted at frame incl. safety device (3 x 400V, 50 Hz)
- traction force: 40 kN
- rope diameter: 14 mm
- Splashguard box
- BOP-handling system / Trolley to move on rails and carriers incl. tackle under rotary table (hook load 15t each)
- free passage from left and right side to preventer to be assured
- drive – on steel frame for carrier truck and rig basement.

2.4 Crown Block

- sheaves: 6 pcs.
- exceptional load: 235 to
- rope diameter: 1 ¼ "

2.5 Traveling Block with hook MC-200

- sheaves: 5 pcs.
- exceptional load: 200 t
- regular load: 180 t
- rope diameter: 1 ¼ "

2.6 Swivel CH-200

- exceptional load: 200 t
- regular load: 180 t
- operational pressure, max.: 210 bar
- goose neck: 4 " LP
- lower sub connection: 6 5/8 " REG LH (pin)
- rotary hose 250 bar incl. GA: 4" LP and hammer unions WECO 4 "1002

2.7 Rotary Table MRL-275

- drive from hydraulic motor, via cardan shaft, with disc brake
- opening size: 27 ½ "
- static load: 320 t
- speed, max.: 150 U / min

3. Components

3.1 Drive Station – 20-ft-Container (sound insulated)

- two (2) diesel-motors, to be used separately or combined
- make: DEUTZ
- type: BF8M1015CP, 520 PS / 400 kW each,
- complete with distribution gear and hydraulic pumps (mounted at drive)
- cooling circuit, electric start device, control valves, preheating system
- complete hydraulic system: oil tank 750 l, oil cooler, filter system
- connected to drilling rig by hydraulic hoses
- pneumatic: compressor, incl. accumulator, dryer and pressure regulating valve

3.2 Hydraulic for Energy Transfer Container – Rig

- four (4) pcs. hydraulic pumps, incl. fill pump and safety device for closed circuit
- one (1) pc. hydraulic motor
- filters in load circuit to grant clean oil (couplings in circuit)
- hydraulic piping, and control lines
- electric and electronic (pressure control, rig selection)
- safety devices (function and locking)

3.3 Hydraulic Operated Draw Work

- main winch 17 t load
- one (1) high torque radial piston motor, complete with all necessary valves for brake operations, speed selection, smooth start and brake control
- four (4) high speed axial piston motors, incl. internal planetary gearbox and holding brakes
- rope length: 460 m
- rope diameter: 1 ¼ "
- grooved rope drum, rope guiding and vibration damper device, with rollers above winch
- winch bock incl. band brake (holding brake)
- electric and electronic circuit for speed and power control
- safety devices (emergency-shut-off, brake control)

Functional features:

- strong gear (I) selectable during winch stop (loads > 80 t)
- working gear (II) up to 80 t, automatic speed adjustment to loads (performance curve)
- automatic brake control
- pull down without loading the diesel engine
- load adjustment of diesel engine while pulling
(rpm of winch independent of rpm of diesel engine)

Data: (at the hook)

- strong gear: up to 180 t = speed: 0 ... 0,23 m/s
to be switched at stand still
- working gear: up to 80 t = speed: 0 ... 1,6 m/s
- automatic load adjustment, switching unnecessary
- up to 15 t full speed (1,6 m/s)
- limitations of maximum traction and maximum speed adjustable

3.4 Auxiliary Traction Winch

- hydraulically driven by hydromotor, incl. brake valve
- rope over sheave in the crown block
- rope length: 120 m
- rope diameter: 16 mm
- traction, max.: 5 t
- speed, adjustable.: 0 ... 1,0 m/sec

3.5 Hydraulic Circuits for Winches and Rotary Table

Winch

- Hydraulic pump, including fill pump and safety devices for closed circuit
- hydraulic piping and control lines
- electric and electronic sensors (pressure control, tool selection)
- safety devices (function and locking)
- 4 (four) pcs. variable displacement hydraulic motors at winch drive
- motors to be switched hydraulically

Rotary Table / TopDrive

- hydraulic pump including fill pump and safety devices for closed circuit
- hydraulic piping and control lines
- electric and electronic sensors (pressure control, tool selection)
- safety devices (function and locking)
- drive for rotary table by radial piston motor (direct drive) and drive shaft
- TopDrive with direct drive from hydraulic motor,
- motors to be switched hydraulically

3.6 Complete Hydraulic System for Working Hydraulic

- axial piston pump
- direction valves block, unit construction system
- valve block "rig up": manual operated, block "working functions": electrical operated
- pipe installation valve for safety functions
- lowering brake valves for controlled sinking
- lockable check-valves to ensure positioning of the mast
- regulating valves for securing of set up cylinders
- various supporting valves and couplings
- various valves for cylinders, manometers and Indicators
- hydraulic support cylinders, under mast basement, with mechanical lock nuts
- hydraulic support cylinders, under carrier truck
- pollution indication for hydraulic filters
- fill in / drain out equipment; for hydraulic oil change

- manual pump with filter, to fill in hydraulic oil or motor oil
- electric and electronic circuit (function control)

3.7 Hydraulic Components on the Rig

- oil tank 800 l incl. sump and drain device
- drilling rig filled with hydraulic oil
- suction filters
- high pressure filters
- return filters
- auxiliary circuit filter device incl. water separation
- oil level indicator and control
- temperature indicator and control
- filter pollution indicator
- oil filling and drain device
- hand pump and filter for oil changes (hydraulic components and motor)

Hydraulic emergency supply

- to be used in case of emergency; enables to rig up and down, without external power
- driven from carrier truck engine, via Power Take Off, to the hydraulic system
- pressure controlled hydraulic pump and fixed displacement motor
- safety devices (only one power drive to be selected)

3.8 Pneumatic System

- supplied by compressor at DEUTZ diesel engine (container)
- for small components
- pressure tank 60 l
- high pressure valve, check valve
- directional valve for displacement cylinder
- two (2) additional adaptors with ball valve

4 Dog House (not in this offer)

5 Electrical Equipment / Electronics / Lighting

5.1 Electrical Equipment

- power supply 230 V / 400 V, 50 Hz, 32 A
- external power supply, 30 m cable, plug 32 A, distribution box, with fuses and switches (outside ex-area)
- junction boxes 400 V (high voltage) and 24 V (control) separately
- cabling, plugs and junction boxes weather-proof
- 3 plugs 230 V on both sides of the rig and in driver's cabin (outside ex-area)
- diagnostic plug and battery charger in driver's cabin
- automobile electrics to be completely switched off for ex-protection
- ex-protection due to valid regulations
gas zone I T3 5m around the well / gas zone II T3 7,5 m around well

5.2 Software

- control software on mobile computers for rig control and monitoring
- interactive multilingual diagnostic software on terminal
- multilingual service tool for notebook on CD (multi-installation possible) incl. hardware interface
- assignment of service level at manufacturer due to customer requirements
(min. requirements of notebook: PIII; 1 GHz; 256MB RAM, Win XP)

5.3 Lighting /230 / 400V AC

- lighting working platform: 6 lamps 230 V, 160 W
- lighting mast: 7 lamps 230 V, 160 W
- position lamps mast top: 1 lamp, red 230 V, 60 W
1 lamp, red 24 V, 5 W
- emergency light: 3 lamps 24 V at stairs
- lighting basement: 2 lamps 230 V, 160 W
- power light for working area: 2 lamps 230 V, 400 W
- signaling device for derrick's man

5.4 Driller Panel / Displays

on working platform (driller panel):

- levers (electrical) for winches and rotary table
- several levers (electrical) for operating functions, several switches
- terminal for monitoring of all rig functions
- displays for speed and torque of rotary table, traction or tool loading of winch, system pressures and temperatures, tank fill levels, warning displays for malfunctions, critical situations
- setting-up options for limitation of maximum hook load and rotary speed and torque
- button for “striking” (rapid down movement of hook and drill string)
- Drillometer and data recorder for logging (paper - registrator)

on the rig

- manometer for operating hydraulic, brake function, monitoring and control
- switches for lighting, control functions and operating modes
- terminal with dialogue device: error displays, operating hour-counter, choice of language, state and functioning control, service notes
- Electric Main Switches (400 V AC and 24 V DC)

6 Cold climate installations (not in this offer)

7 Preparations for loading and transport

- The rig is prepared for crane loading (see: loading and transport instruction)

8 Accessories

- Tool box, lockable incl. board tools
 - 1 set of ring spanners
 - 1 set of jaw wrenches
 - 1 set of hex-wrenches
 - 1 set of screwdrivers
 - 1 pc. Hammer, 500 g
- fire extinguisher
- wedges
- Instrument box for checks of hydraulic and electronic circuits

9 Others

- test run, check-up of safety devices, traction test
- inspection certificate of German Mining Authorities / Road Authorities DEKRA
- training for maintenance staff at our plant in Gommern
- functional test run and hand over to the customer

- **The first rig up and instruction of Customers personnel at customers site, by two (2) experts, will be done on the base of an separate agreement, regarding time, services and costs, between customer and us.**

10 Documentations / Certificates

- supplier's declaration
- rig control manual
- documentation: service manual, maintenance and spare parts book
- ATEX

11 Additional Equipment (TopDrive and guiding frame)

- Guiding frame at the Mast
special mast device to be used for TOP-DRIVE version

Data of the Power swivel

11.1.1 Dimensions

General

The power swivel is used for rotating the drill pipes. Furthermore it is used to screw and unscrew drill rod connections by using other auxiliary devices. For torque transmission the swivel is guided at the mast. The traction force is achieved by winch drive. The usage of a normal hook or rotary table is not necessary. Furthermore the flushing head, as usually used, is already installed at power swivel. The power supply is effected by carrier truck (same as rotary table drive)

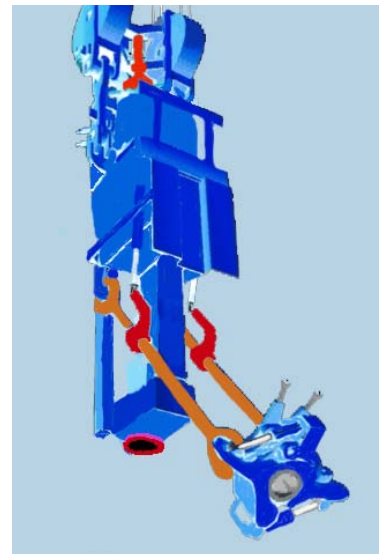
11.1.2 Specification

- traction up to: 200 t
- torque:
 - 1. gear, up to: 32 kNm
 - 2. gear, up to: 16 kNm
- speed:
 - 1. gear, up to: 80 rpm
 - 2. gear, up to: 160 rpm
- passage: 75 mm
- mud pressure, max.: 210 Bar
- hydraulically switched
- oil supply: 770 l/min
300 bar

Construction

The Power Swivel consists of the following components:

- housing with heavy axial bearing
- hydraulic rotary drive with hollow shaft / switch able
- flushing head with elbow and adaptor for mud hoses
- elevator with tilt able suspension
- break-device incl. length compensation
- lock-up function for mud hoses / pipes (2 pcs.)
- carriage with rolls and suspension
- guiding frame for installation at the mast
- hydraulic connections for consumer activation
- automatic lubrication device for bearings and swivel



Operation / Handling

assembly and disassembly of drill pipes and rods

- with elevator - no difference to usual handling
- mud pipe remains installed at swivel
- screwing and unscrewing by break-device at working platform

disassembly of first pipe after drilling operation

- unscrewing of first and second drill pipe with break-device
- unscrewing of first pipe at swivel to be done above
- otherwise pull down into screw device won't be possible before
- holding function to be activated (to avoid rotation of string)
- increasing of torque for unscrewing by break device and break cylinder

assembly of last drill pipe for drilling operation

- to be screwed at power swivel on top
- holding function to be activated (to avoid rotation of string)

drilling operation – setting back drill pipes

- lock-up of mud pipe
- unscrewing of last drill pipe at swivel
- taking new pipe by elevator
- screwing below with screwing device
- screwing on top of swivel
- open-up mud pipe

Note:

These engineering specifications are made on a theoretical basis. Actual specifications will vary according to specific drilling conditions. We reserves the right to change and make design modifications without prior notification or obligation.