



Hütte Model HBR 610 (Tier 4F) Hydraulic Crawler Drill Configured with Dual Rotary HG13 / HG28 s/n H610UX0103, Unit: 54488, Item: 9753243498

General Description:

- ◆ The Hütte HBR 610 is a self-contained, highly versatile fully hydraulic crawler drill rig, CE-conforming and equipped with a state-of-the-art diesel engine technology and outstanding mast articulation. It features a compact and robust design, simple and safe controls and enormous gradeability as well as high fuel efficiency.
- ◆ Furthermore the unit provides a modern and operator-friendly “load-sensing” hydraulic system. The variable displacement pumps are pilot controlled and permit a stepless adjustment of the oil flow depending on the required flow rate of the drilling function. All movements of the drilling unit are softly controllable.
- ◆ An optimal operating temperature is guaranteed and regulated by hydraulic pump P3 with a singular purpose of circulating 209 lpm through the oil heat exchanger. A thermostat then ensures a perfect operation even under severe conditions.
- ◆ The stepless adjustable tramming speed provides a versatile and mobile machine movement.
- ◆ The Hütte HBR 610 can be configured with various rotary head arrangements including hydraulic drifters, single rotary, dual rotary rotary-rotary percussion.
- ◆ These advantages are complemented by a wide performance spectrum of the Hütte HBR 610:
 - Anchoring
 - Micro piling
 - Geothermal applications
 - Jet grouting
 - Drive drilling
 - Rock drilling/blast hole
 - Overburden drilling
 - Down-the-hole-drilling
 - Auger drilling
 - Injection drilling
- ◆ The crawler drill rig type Hütte HBR 610 is composed of:

Basic Machine:

- ◆ Base frame with hydraulic oil tank (630 l) and diesel tank (400 l) as well as reception for diesel engine, slewing column and crawler frames.
- ◆ Cummins diesel engine type QSB6.7, water cooled with:
 - installed power: 194 kW (264 HP) @ 2300 rpm
 - certified EU Step 4, US EPA Tier 4F
- ◆ Sound-proof cover with modern and strong grips and wide dimensioned slewing doors allowing an easy access for maintenance and control purposes.
- ◆ Electric system: 24 Volt, 140 Ah

Radio-remote controls

- ◆ Fully radio remote. Includes all functions for operation:
 - Working rotation controls for HG28 including speed / torque selector and variable speed dial. Separate rotation joystick for makeup / breaking speed.
 - Working rotation controls for HG13 including speed / torque selector and variable speed dial. Separate rotation joystick for makeup / breaking speed.
 - Feed controls including variable speed dial. Separate feed joystick for fast feed.
 - Rotary, feed and clamp pressure adjustment dials.
 - Tramming controls
 - Winch and jib controls
 - Magazine controls
 - Air and water on / off
 - All setup functions
 - Emergency shut-off
- ◆ Separate cable for full operation under situations of frequency interference

- ◆ Full backup controls on drill rig (behind side panel)
- ◆ Includes tramming only remote for safer transport.
- ◆ Pressure maintenance instruments.

Kinematic – front of the wall type

- ◆ Operator friendly mast set-up kinematics, including 10 hydraulic cylinders all with Hawe 400 bar counterbalance valves (internal damping type). Displacement cylinder with 1000 mm stroke.
- ◆ Cylinders include:
 - Two boom raise cylinders (on bottom of boom).
 - Two mast raise cylinders (on top of boom).
 - Two FTW cylinders. Both cylinders remain connected at all times providing full FTW articulation to either side of the machine.
 - Two mast raise cylinders (on top of FTW connection)
- ◆ Kinematics mounted on a 250 mm pin that runs the full length of the hydraulic oil tank (through a structural tube) with bearings front and rear providing a strong, rigid and tough connection to the machine (a Hütte exclusive feature).
- ◆ Front of the wall kinematics allows micropiles to be installed in any position in the full 180° arc.
- ◆ Front of the wall kinematics, in conjunction with the 250 mm rear pivot cylinders, allows anchors to be installed in any position in the full 180° arc at any angle from horizontal.

Crawlers:

- ◆ Crawler tracks type FL6 with independent oscillating mounted on base frame.
- ◆ The oscillating tracks ensure a stable machine on uneven ground conditions. This function can also be used for set-up and loading on low bed trucks.
 - Track width: 2480 mm (8.14')
 - Total length: 3560 mm (11.7')
 - Ground clearance: 348 mm (13.7")
 - Travelling speed: 1.8 km/h
 - Crawler width: 500 mm (20")
 - Track rollers top: 2 pieces
 - Track rollers bottom: 9 pieces
 - Hydraulic track oscillation: +13.5° / -10°
 - Max gradeability: 10°
- ◆ Traction force: 177 kN (40,000 lbs)

Hydraulic System:

- ◆ LS (Load-Sensing) Hydraulic system
 - Rexroth A8VO-140 axial piston variable double pump w/ individual power controller and load sensing delivers 2x 308 l/min for a total of 616 l/min for travelling, rotation / percussion and all cylinder functions.
 - 1 fixed displacement gear pump Q = 179 l/min for re-circulating hydraulic oil thru hydraulic oil cooler and pilot control.
 - 1 fixed displacement gear pump Q = 54 l/min for operating hydraulic oil cooler fan
 - 1 fixed displacement gear pump Q = 134 l/min for auxiliary flushing pumps
 - System pressure p = 350 bar
- ◆ The Rexroth A8VO-140 primary pump provides the following features:
 - The hydraulic coupling of the two individual controllers provides the function of a summation power control. However, the two rotary groups are coupled hydraulically, not mechanically.
 - The operating pressures of the two circuits each act on the differential pistons in the two individual controls, causing both rotary groups to swivel out and back together.
 - If one pump is working at less than 50% of the total input power, the remaining power can be transferred to the other pump, up to a limit of 100% of the total input power.
- ◆ Hydraulic distributors are best quality Hawe PSV 3 and PSV 5.
- ◆ Dual Hydac Betamicron 4 Plus return filters.
- ◆ Oil-air-cooling system, hydraulically powered with automatic variable fan speed.

Electronic Control System:

- ◆ TT Controls HY-eVision² 7.0" color display controller (by Hydac International): This compact 7.0" display controller is specifically designed for extreme environmental conditions and is therefore perfectly suited for use in foundation drilling equipment. The unit, designed for panel mounting, offers IP 65 protection. The display is characterized by low reflection and high color saturation and provides optimal readability in any lighting conditions.
- ◆ TT Controls type HY-TTC 90 programmable logic controllers (PLC's): HY-TTC 90 are an extremely robust and powerful electronic control unit for use in off-highway applications. They comply with the international IEC 61508 and ISO/EN 13849 standards on functional safety. They are equipped with the Infineon XC2287M CPU providing enhanced safety features for protecting internal RAM and flash. HY-TTC90 fulfills SIL 2 (Safety Integrity Level) and PL (Performance Level) requirements. They are part of a complete and compatible product family and are protected by a compact, automotive-style housing suited to mobile applications in harsh environments.
- ◆ CAN bus (controller area network) type network that allows the controllers to communicate over a simple dual-wire data bus. Also, because the CAN bus system is already incorporated, third party telematic systems can be easily adapted to the machine for remote diagnostics.

Electronic user interface:

- ◆ The Hütte 610 user interface is via the TT Controls HY-eVision² 7.0" color display. The interface provides the following screens and features:
 - Home screen: provides basic information such as engine rpm, fuel level, hydraulic oil temperature, engine coolant temperature, indications of engine or machine alarms, DPF status, jet-grout settings etc.
 - Menu screen: provides access to diesel engine detailed information, jet-grouting setup, machine configuration setup, machine parameters setup and hydraulic pump power control.
 - Engine screen: provides detailed engine related information including the basic information such as fuel efficiency, level, torque, rpm plus Cummins SPN and FMI error codes and DPF soot and ash levels.
 - Machine Setup screen: allows setting the configuration of the machine to match installed components thus maximizing hydraulic efficiency of the system. Access is by password only.
 - Parameters screen: allows customized settings of flows, temperatures etc... of the hydraulic system. Access is by password only.
 - Black Box screen: provides access to historical machine and engine faults with date & time of each fault.
 - Power Control screen: allows access to primary load sensing pumps P1 and P2 power management function where the priority level can be set between P1 and P2. Access is by password only.
 - Service screen: provides access to view active PLC electrical input and output values and tramming remote diagnostics.

Smart diagnostics:

- ◆ The Hütte 610 utilizes Hütte's smart diagnostic system. The smart diagnostics system monitors all PLC inputs / outputs, engine parameters, solenoid circuits, limit switch circuits and safety devices and warns when any circuit or device is operating outside of normal parameters. The smart system identifies the faulty component or circuit by function description and component number and provides a detailed explanation of the anomaly.

Drill Mast:

- ◆ Segmental drill mast type Hütte DM 260 with feed gear with laterally mounted hose guide chain in tramming direction left.
 - Mast total length w/ clamp support: approx. 8650 mm (without considering energy chain)
 - Mast max working length (with energy chain extended): approx. 10,500 mm
 - Feed length with double head approx 5055 mm
 - Crowd and retraction force: 130 kN or 65 kN (in high speed mode)
 - Working feed rate: 11 m/min
 - Fast feed rate: 90 m/min
- ◆ Trolley (2 single for dual rotary) with low-maintenance nylon slide blocks and quick release central chain holder for double-head unit HG28/HG13 with lateral movement; including dual flushing cylinders with 400 mm stroke for movement of HG13 relative to HG28.
- ◆ Hydraulically extendable mast foot with 1000 mm extension.
- ◆ Prepared for possibility of jet-grouting extensions.

Rotary Heads:

- ◆ Double head drilling device type Hütte HG28/HG13 consisting of:
- ◆ Bottom two motor rotary head type HG28 with 5 speed/torque positions. The HG28 utilizes latest Eaton Char-Lynn HP30 two-speed hydraulic motors with Hütte switching manifold.
 - Torque setting 1: 27.4 kNm (20,225 ft-lbs) @ 27 rpm
 - Torque setting 2: 22.8 kNm (16,820 ft-lbs) @ 32 rpm
 - Torque setting 3: 18.1 kNm (13,350 ft-lbs) @ 41 rpm
 - Torque setting 4: 13.7 kNm (10,100 ft-lbs) @ 54 rpm
 - Torque setting 5: 9.05 kNm (6,675 ft-lbs) @ 82 rpm
 - Working pressure: $p = 275$ bar (at rotary head)
 - Flow rate: $Q = 170$ l/min
 - 5 stages electro-hydraulically reversible
 - Forced lubrication via bottom mounted oil pump
 - Clean hydraulic plumbing with no hoses across face of rotary head
- ◆ Top single motor rotary head type HG13 with 2 speed/torque positions. The HG13 utilizes latest Eaton Char-Lynn HP30 two-speed hydraulic motors with Hütte switching manifold.
 - Torque: M_{max} 9.5 kNm (7,000 ft-lbs) @ 67 rpm
 - Torque: M_{min} 6.5 kNm (4,800 ft-lbs) @ 102 rpm
 - Working pressure: $p = 275$ bar
 - Flow rate: $Q = 150$ l/min
 - 2 stages electro-hydraulically reversible
 - Forced lubrication via bottom mounted oil pump
 - Clean hydraulic plumbing with no hoses across face of rotary head
 - 2" top air/water swivel

Clamps:

- ◆ Hydraulic clamping and breaking units for drilling dia \varnothing 58 mm – 254 mm, mounted on support consisting of:
- ◆ Hydraulic clamping device type Hütte C2-1 (bottom):
 - Clamping force: $F = 196$ kN at $p = 250$ bar
 - With pin / o-ring style jaw inserts
 - Centering device
- ◆ Hydraulic clamping and breaking device type Hütte CB2-1 (top):
 - Clamping force: $F = 196$ kN at $p = 250$ bar
 - Breaking torque: $M = 25,5$ kNm at $p = 250$ bar
 - With pin / o-ring style jaw inserts

Flushing / Cleaning Pump(s):

- High pressure pump (piston type) for water misting and cleaning type Dynaset HPW 220/50-70
 - water pressure: $p = 220$ bar
 - delivery: $Q = 50$ l/min
- ◆ Prepared for flushing during drilling and pressure washing.
- ◆ High pressure cleaning lance type Kärcher with hose reel.

Service Winch:

- ◆ No service winch or jib installed

Magazine:

- ◆ Hütte type M3-2 magazine system (arc style) for both rods and casing
 - Arc shaped "quiver" holds seven (7) pieces of 152.4 mm casing with rod x 3000 mm long. Other quivers can be utilized for up to 219 mm casing.
 - A rotating dual clamp hydraulic manipulator picks the rod and casing out of the quiver (together) and rotates them into the drilling axis between the rotary heads and the clamps.
 - As the rods are removed from the hole, they are returned to the quiver by the hydraulic manipulator.
 - As the casings are removed from the hole, they are also returned to the quiver over the already present rods.
 - The rods and casing are then ready for the next hole.

- ◆ Hydraulic casing roller
 - Adjustable height, hydraulically actuated, “V” shaped roller mounted above the top clamp ensures proper casing alignment when adding a new section. The roller both speeds up the process and protects the casing threads.

Other Features:

- ◆ Oiler 20 liter Type Lubro Star EH21/20/2AG with max pressure of 35 bar (507 psi)
- ◆ Rear stabilizers to assist with micropile crowding force
- ◆ Air line hydraulic valve 2”
- ◆ Accident-prevention shut-off on drill mast (safety ropes)
- ◆ Working lights on machine and mast
- ◆ Lockable steel job box mounted above right track
- ◆ Fire extinguisher / tool box
- ◆ Painting: Hütte blue, RAL 5010