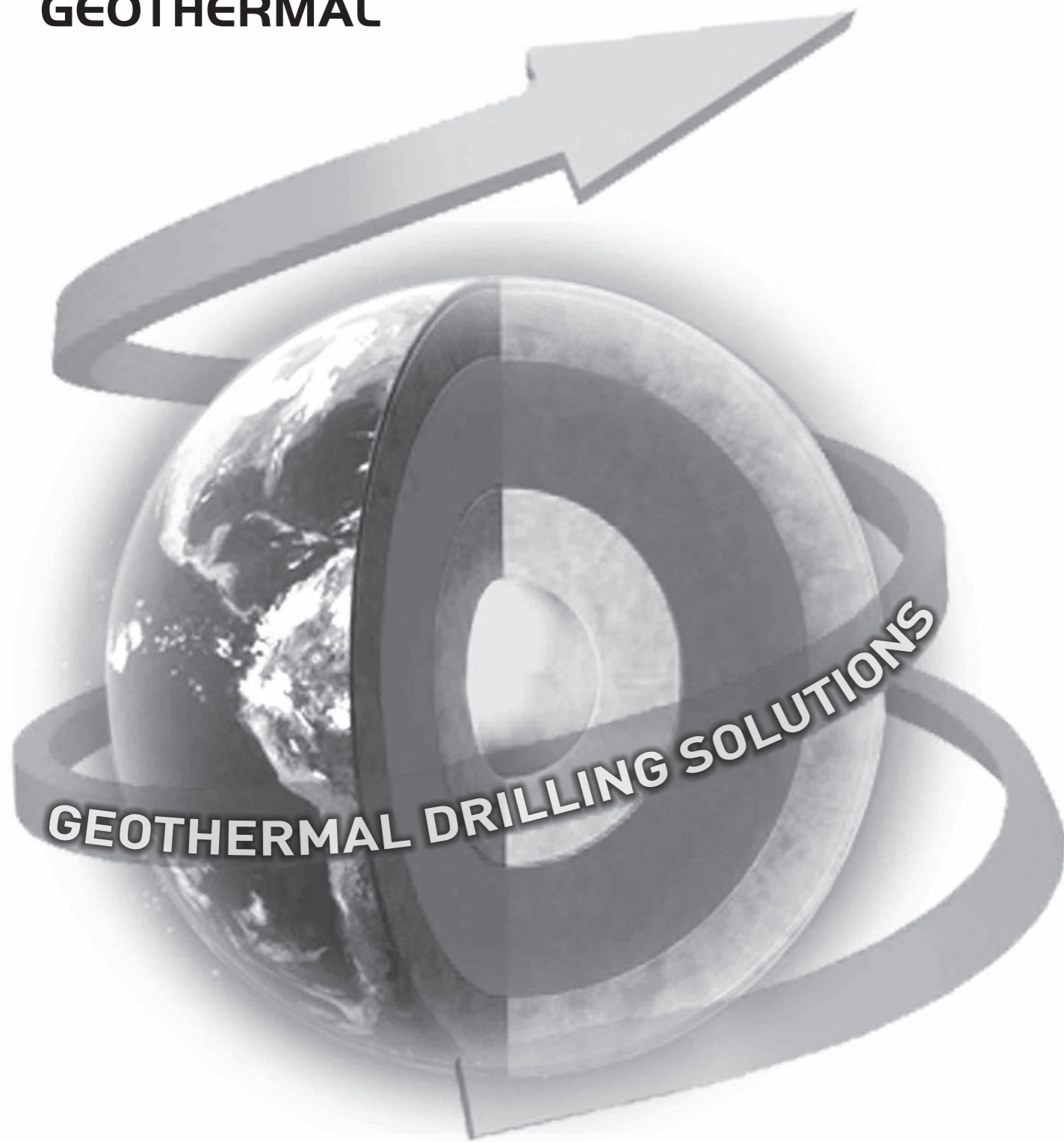


# GEO THERMAL



Hydraulic crawler mounted drilling rigs specifically suitable to perform drillings for the installation of borehole heat exchangers (BHE) and water well drilling. These units use all rotary and/or rotary percussive drilling systems and Down the Hole Hammer (D.T.H). Among these specific units the GEO 909 GT is the unique one with a patented automatic loading system for drilling rods and casings.



Passione  
Passion

Qualità  
Quality

Innovazione  
Innovation

SINGLE HEAD

DOUBLE HEAD



## GEO 602

Engine Power	86 kW (115 HP)	
Mast Feed stroke	4.000 mm	13,1 ft
Feed force	6.500 daN	14,613 lbs
Retract force	9.500 daN	21,357 lbs
Rotary Torque	450 - 2.370 daNm	3,319 - 17,480 lb*ft
Rotary Speed range	35 - 870 rpm	
Clamp range	45 - 320 mm	1,8 - 12 in
Weight	9.000 - 10.000 kg	20,000 - 22,000 lbs

Small-medium size hydraulic drilling rig, more powerful version of the GEO 601, able to perform various tasks such as:

- **Drillings into rock**  $\varnothing$  8" - 10" up to 200 meters depth (656 ft) using 6" - 8" DTH hammer and pre-drillings with ODEX DTH hammer up to 30 - 40 meters depth (98 - 131 ft).
- **Drillings in soft soil**  $\varnothing$  8" - 10" up to 180 - 200 meters depth (590 - 656 ft) using tri-cone / tri-blade tools and an appropriate mud pump activated directly by the drilling rig hydraulic circuit.



## GEO 655 with automatic pipe handling system

Engine Power	86 kW (115 HP)	
Mast Feed stroke	4.500 mm	14,7 ft
Feed force	4.500 daN	10,116 lbs
Retract force	6.500 daN	14,612 lbs
Rotary Torque	450 - 930 daNm	3,319 - 6,859 lb*ft
Rotary Speed range	45 - 140 rpm	
Clamp range	45 - 220 mm	1,8 - 8,6 in
Weight	11.000 - 11.500 kg	24,000 - 25,000 lbs

Based on the main features of the GEO 601, the GEO 655 is distinguished by a PATENTED automatic drilling rods loading system with 198 meters (650 ft) capacity that allows one single driller to operate the machine, thus reducing operating costs and improving safety.

- **Drillings into rock**  $\varnothing$  4" 1/2 - 5" up to 180-200 meters depth (590 - 656 ft) using 4" DTH hammer and pre-drillings with ODEX DTH hammer up to 15-30 meters depth (49,2 - 98,4 ft).
- **Drillings in soft soil**  $\varnothing$  4" 3/4 - 5" up to 120-150 meters depth (394 - 492 ft) using tri-cone / tri-blade tools and an appropriate mud pump activated directly by the drilling rig hydraulic circuit.

## GEO 900 with/without automatic pipe handling system

Engine Power	126 kW (169 HP)	
Mast Feed stroke	4.000 - 6.800 mm	15,7 - 26,7 ft
Feed force	8.000 - 10.000 daN	17,984 - 22,480 lbs
Retract force	12.000 - 20.000 daN	26,977 - 44,961 lbs
Rotary Torque	1.300 - 3.600 daNm	9,588 - 26,552 lb*ft
Rotary Speed range	60 - 310 rpm	
Clamp range	45 - 360 mm	1,8 - 14 in
Weight	13.500 - 15.500 kg	30,000 - 34,000 lbs

Based on the main features of the GEO 655, the GEO 900 is distinguished by its higher performance combined with a PATENTED automatic drilling rods loading system with up to 200 meters (656 ft) capacity that allows one single driller to operate the machine, thus reducing operating costs and improving safety.

- **Drillings into rock**  $\varnothing$  10" - 12" up to 300 meters depth (984 ft) using 6" - 8" DTH hammer and pre-drillings with ODEX DTH hammer up to 50-60 meters depth (164 - 197 ft).
- **Drillings in soft soil**  $\varnothing$  10" - 12" up to 300 meters depth (984 ft) using tri-cone / tri-blade tools and an appropriate mud pump activated directly by the drilling rig hydraulic circuit.



## GEO 901

Engine Power	225 kW (302 HP)	
Mast Feed stroke	4.000 - 7.000 mm	13,7 - 22,9 ft
Feed force	12.000 daN	26,977 lbs
Retract force	20.000 daN	44,961 lbs
Rotary Torque	1.500 - 4.800 daNm	11,063 - 35,402 lb*ft
Rotary Speed range	220 rpm	
Clamp range	45 - 520 mm	1,8 - 20 in
Weight	19.000 - 22.000 kg	42,000 - 48,500 lbs

Based on the main features of the GEO 900, the GEO 901 is distinguished by its higher performance.

- **Drillings into rock**  $\varnothing$  10" - 12" up to 400 meters depth (1.312 ft) using 6" - 8" DTH hammer.
- **Drillings in soft soil**  $\varnothing$  10" - 12" up to 400 meters depth (1.312 ft) using tri-cone / tri-blade tools and an appropriate mud pump activated directly by the drilling rig hydraulic circuit.



# GEOHERMAL

The drillings that use the "double drill string" system are also called "with double head". This system allows to stabilise the hole throughout the entire depth in a fast and efficient way and at the same time it preserves the underground water by preventing the layers located at different depth from getting into communication thanks to the use of casings. The system consists of a lower rotary head rotating (generally counter clockwise) the outer drill string (casings) and an upper rotary head rotating clockwise the inner drill string (drilling rods) and the related drilling tool. The continuous movement and the counter rotation of the two rotary heads allow a rapid and homogeneous penetration and facilitate the ascent of the drill cuttings. A crown bit is fitted at the bottom of the casings, whereas the rods can mount down-the-hole hammers, tri-cones or tri-blades at their base, depending on the drilling method being used.

This system is generally implemented in the following conditions:

## - In case of LOOSE ROCKY TERRAIN

In presence of loose terrain, gravel and alluvial formations the tool fitted to the inner drill string is mainly a down-the-hole hammer (D.T.H.) pneumatically operated through a remote air compressor that provides the compressed air necessary to activate the hammer and at the same time to bring to surface the drill cuttings that are conveyed in the air gap between the inner and outer drill string.



## - In case of SOFT SOIL (clay, sand etc.)

The system can be efficiently used also in soft soil conditions, but the tool fitted on the inner string has to be a tri-cone or a tri-blade with direct circulation of bentonitic mud or polymers. These fluids are injected by an appropriate pump that can be activated by the hydraulic circuit of the drilling rig or can be remote. Their main function is to lubricate the drilling tools and to bring to surface the drill cuttings.



In both cases the drill cuttings are conveyed and collected through special systems in order to avoid the pollution of the environment in which the drilling is performed.

