



# Advantages Grundodrill Technology



## Product range

- all Grundodrill bore rigs serially equipped with **Auto-bore** incl. **performance step regulator**, **pre-equipped for rock-drilling** - no conversion required, **low noise emission**
- **20 years of experience** with steerable bore rigs
- **X-Series** with 4, 7, 10, 13 and 15 t thrust /pulling force  
4 X without percussive hammer



X-Series  
All weather cabin  
optional

- **GRUNDODRILL 7X with Integrated mixing system**



Unique:  
Grundodrill 7 X with  
Mixing system  
on board

- **N-Series** with 15 t and 25 t thrust/pulling force and **pre-equipped for cable guided bores**
- optionally with **bore data log** acc. DVGW GW 321
- direct display on **"board computer"**  
with the **pulling forces** affecting the pipe
- with **maximum Bentonite flow rate** (500 l/min)



N-series with complete cabin

## compact construction

- all Grundodrill models are built very compactly, i.e. they only require minimum space, e.g. for inner-city jobsites, in narrow alleyways, field paths, drive-ways and for parallel installations at the roadside. The roads are not unnecessarily used, the traffic flow can be routed alongside. Furthermore low axis distances allow for working close to house walls.



GRUNDODRILL 15 N  
Total width 2,06 m



Vermeer D 36 x 50  
total width 2,95 m



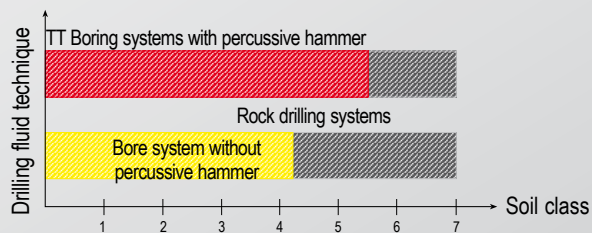
# Advantages Grundodrill Technology



## Percussive hammer

- The dynamic percussive hammer facilitates thrust and steerability in the ground up to soil class 5, partially even soil class 6.

**X-Series 1000 strokes/min, N-Series 1500 strokes/min.**



The percussive hammer works in even tougher soils, where other systems have to apply even more force.

## Drill Rod loading system

- semi-automatic
- fully hydraulic
- with automatic sensor
- loading and unloading of drill rods from below
- 25 N: drill rod loading and unloading via gripper from above
- larger drill rod magazine

**(X-Series up to 168 m, N-Series up to 288 m bore length)**



## Drill rod lubrication

automatically and correctly dosed



- rubberised **undercarriage** (no pic.) for X-Series for easier movement of the bore rig in terrains with limited access.
- rubberised **steel undercarriage** (see pic.) for 15 N and 25 N
- preserves paved surfaces
- stable due to two **stabilisers**

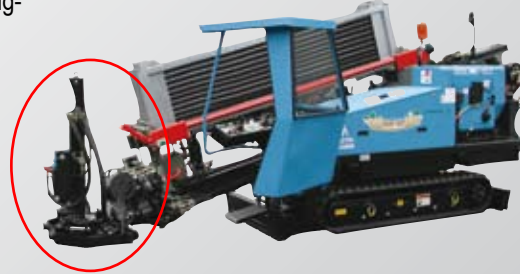




# Advantages Grundodrigill Technology



- optional with **anchoring hammer system** for even higher standing stability. The anchoring system thrusts the anchors into the ground (no spiral conveyer) A hydraulic cylinder pulls the anchors out again.



- extremely stable and **rigid break-away system** for loosening and connecting the drill rods.



- N-Series: The **only system** of its class with an operator friendly and comfortable **complete cabin**, Can easily be swivelled and fixed to 5 positions, step-aid, air conditioning, floor heater, 2 searchlights, warning lamp, function indicator with coloured display, bore data log, ergonomically adjustable operator seat, joysticks, radio, CD, hook-out window, thermal protection glass, spacious, all-round view.



- Modern **function indicator** with colour display (no instrument cockpit) speedy indication of all bore functions, maintenance indications and much more, optionally with data storage chip (like a black box) for the bore data log acc. to DVGW GW 321
- with software for remote data transfer of the tensile strength with **Grundolog III**



Chip for data storage

Function indicator (Size: approx. 40 x 40 cm)

- all functions **via 2 joysticks** and poti step-less regulation Ask for our Learner-CD (Product presentation 15 N)





# Advantages Grundodrill Technology



- Drive mode also with **cable-remote** control for all Grundodrill types



Remote control for X-Series...



for N-series



- X-series with easily surveyable control stand and integrated comfortable seat
- optionally with all-weather cabin

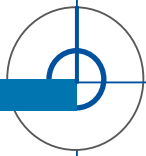


- X-series with easily surveyable operating panel



- 7 Xplus with **mixing system on board** (w/o mixing tank)  
Water supply directly from a hydrant or other water source, flow rate up to 90 l/min, quick adaption to alternating soil conditions, drive via bore rig, 1/3 less space and transport requirements.





# Advantages Grundodrill Technology



**"no competition" - the best mixing system by far**

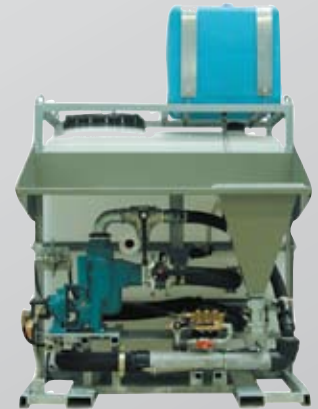
### MA 04 for Grundodrill and Grundopit

880 l tank, fresh water tank 20 l, high pressure pump: 40 l at max. 55 bar. Mixing and circulation pump 300 l Integrated drive with Hatz Diesel engine, 5 kW

MA 04



MA 09



### MA 09 for Grundodrill 4 X and Grundopit

1100 ltr tank, fresh water tank 200 l High pressure pump 60 l/min at max. 50 bar. Circulation capacity: 500 l/min Drive Hydraulic power unit TTM9, 10kW

Hydraulic power unit TT M 9 for MA 09



### • MA 07 for all HDD-bore-rigs

choice of either operating with hydraulic power unit, Diesel engine or power aggregate, capacity of the mixing and circulation pump 1500 l/min, transfer pump 550 l/min., quick mixture (3 Min.) centralised distribution system for quick circulation and swivelling into the corners of the tank, Venturi nozzle processes over 25 kg/min dry Bentonite via high Bentonite storage, suitable for rock drilling.

2 mixing tanks (2 x 1 m) each 4000 l

Mixing aggregate Diesel version



1 Tank for mixture  
1 Tank for storage, to secure a continuous bore operation

Variation **MA 07-D** for Grundodrill N-series  
Drive via Integrated Diesel engine

Variation **MA 07-E** for Grundodrill N-series  
Drive via power unit 45 kVA

Mixing tanks

Drive via power unit 45 kVA



Mixing aggregate Electro version



Variation **MA 07-H** for Grundodrill X-series  
with 200 l fresh water tank  
Drive via hydraulic power unit TT M 110

Mixing tanks

Hydraulic power unit TT M 110

200 l fresh water tank



Mixing aggregate Hydraulic version





# Advantages Grundodrigill Technology



- **Truck components** upon customer request (even container)
  - with mixing system MA 07
  - Tool bench
  - Accessory holding appliances,
  - Hose reels



- ... • Storage possibility for Bentonite,
- Twin-axle trailer with loading ramps for the bore rig



Transport trailer



Accessory holder



- Machine technology with first class **production quality** therefore low maintenance and wear, above average boring efficiency, longest service life of all HDD rigs on the world market, clean installation method with numerous measuring points, easily accessible, manual hydraulics, metric - no connections with "inches" (screws, fittings, threading), corrosive protection, e.g. hot galvanised drill rod box good noise buffering, low noise emission, environmental friendly fuels



clean fabrication - easily accessible



Corrosive protection, e.g. hot galvanised Box for drill rods

# Advantages Grundodrill Technology



## **Manual hydraulics for more safety and reliability**

- Unique in comparison to other HDD bore rigs = the manual hydraulics, which in case of any electrical component failure is switched on immediately to complete the bore.
- With the manual hydraulics all necessary bore functions can be carried out and you can carry on working without any standstills or interruptions.



## **high quality supply parts**

TT attaches great importance to high quality even with the parts from suppliers (no susceptible cheap parts) like for example motors and pumps, which are mainly made in Germany.



e.g. Bentonite pump or Hatz Diesel engine

## **Individual vehicle design layouts**

- individual design / painting according to customers request
- truck design / Inscriptions



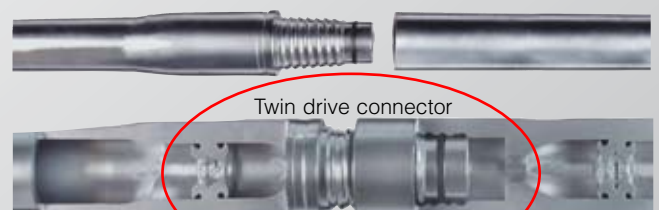
## **high safety standard**

TT places a lot of emphasis on safety  
All TT machines are in accordance with the valid EU regulations **CE certified** and additionally in accordance with the work safety regulations of the civil engineering liability insurance association.



## **Twin-drive drill rods**

- for highest pulling and pressure loads
- for easier unscrewing with low torque
- insensitive to dirt
- for long service life
- made of highly flexible special steel to allow
- optimal bending radius



Twin drive connector

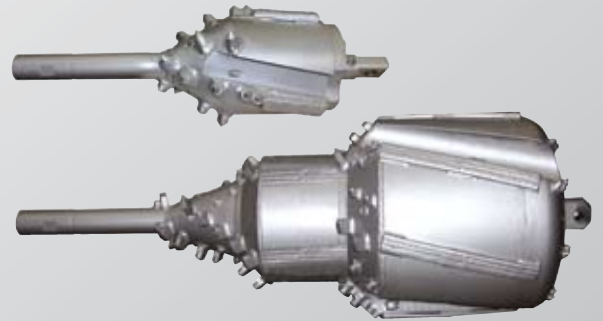


# Advantages Grundodrill Technology



- Extensive accessories

Backreamers for all bore units from 50 to 1.045 mm Ø, with flow grooves, weld-on claw or other attachments upon request, with integrated swivel (Initial rod of your choice e.g. API, Ditch Witch, Vermeer, Tracto-Technik)

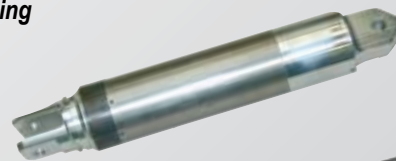


- **Bore heads** for various soils
- **Backreamer** with exchangeable cutting blades (therefore economical, patented),
- **PE-Pipe pullers** for all pressure steps of a pipe's nominal size
- Tensile strength measuring device **Grundolog III** for assembly between Pipe-puller and swivel, **measuring in actual working time**, Measuring range from 0-1250 kN, 35 hrs operating duration, **Transmission mode** – therefore direct access to the bore process possible, short construction length, low weight, for plastic, steel and ductile cast pipes.
- **Bore accessories** can also be manufactured **upon customer request**.
- Ask for an Accessories catalogue!



Bentonite Testing set

Pulling force measuring device GRUNDOLOG, Measuring precision 0,1% for HDD + Pipe bursting

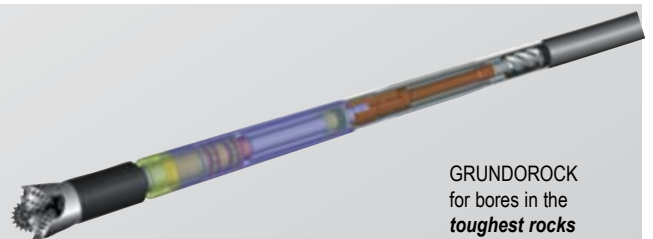


depending on soil various bore heads



GRUNDOREAM (Patented) Backreamer with exchangeable cutting blades

- GRUNDOROCK **Rock drilling motor** for all HDD bore rigs independent of manufacturer, applicable in 100 –250 kN classifications
- Pilot bores from 100 to 150 mm, expanded bores up to 460 mm
- without conversion and additional components
- highest efficiency with lower drilling fluid quantity



GRUNDOROCK for bores in the toughest rocks

- **Cable guided bores** are necessary for rock drillings, river crossings with strong currents, in extreme depths and lengths, with interferences (frequency interference) due to railway lines, steel pipes, cable and power cables etc.)
- The N-series is pre-equipped for cable guided bores.

Hole-opener for expanded bores in rocks with exchangeable TCI cutters, from 6" to 18", Depending on the degree of hardness In the ground, even special TT-backreamers can be applied.





# Advantages through TRACTO network



- **Large scale bore rigs** with up to 460 t pulling and thrust force available from our sister company Prime Drilling
- Vertical bore rig up to 250 m depth for **geothermal energy extraction**



- steerable compact bore rigs GRUNDOPIT specially for **new house connections**  
(Ask for special brochure)



GRUNDOPIT Manhole

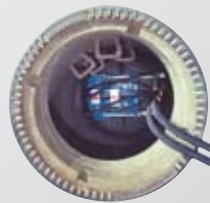


GRUNDOPIT Standard/Power



GRUNDOPIT Compact

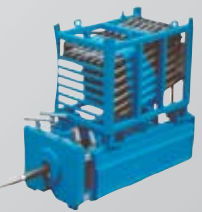
- Wide product range also for **pipe renewal** according to the **pipe bursting** method. TT has also pioneering achievements with British Gas. The machine technology can also be applied for **swagelining** and **relining**. (Ask for special brochure)



GRUNDOBURST Mnahole



GRUNDOBURST 400 G



GRUNDOBURST 800 G



The patented QuickLock bursting rods significantly shorten construction time.

- With the **'big busters'** pipes up to OD 100 can be replaced. The Grundoburst 1250 CP's special feature is a double pass which enables pulling in of the bursting rods without interruptions.



Roller-cutting blades



GRUNDOBURST 1250 CP



GRUNDOBURST 2500 G

- The Grundobore 200 S is a **pilot-steered auger boring unit** which was especially designed for **installing gradient pipes** for house connections. The machine can be applied from out of a pit or out of a manhole.





# Advantages Grundodrigill Technology



## Production

- View of the production area of the steerable bore units



## Quality control

- Before being delivered all TT machines are tested thoroughly in our own test stand



## Delivery to customer

- Handing the machine over to the customer



- individual *machine graphics*



- even after years of use a high *re-sale value*.  
The top quality is the key for a long service life.  
There are for example bore rigs with more than 15.000 operating hours or machines still functioning well even after more than 10 years.





# Advantages Grundodrigill Technology



- **Experience oriented software**

Software programme for calculation, planning, soil analysis and bore aid



- **quick spare parts and repair service** due to local and nationwide service outlets, sister companies in The UK, France, USA and Australia, as well as more than 60 sales partners worldwide.



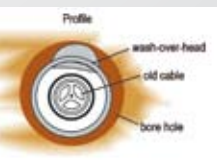
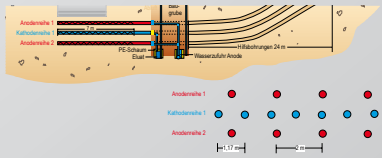
German service prize 2003

- comprehensive **training and education**
- **Hands-On-Days** with lectures and practical machine demonstrations at the TT test site.

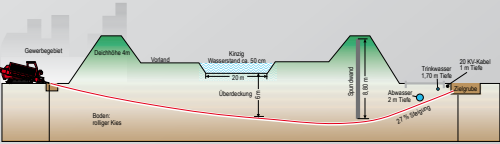


- **jobsite support** for special and unique bore tasks

e.g. electro-kinetic ground sanitation



Exchange of ground cables with wash-over method (only at TT)



cross-section, wash-over head, old cable, bore hole



# Advantages Grundodrig Technology



- Tractuall *customer magazine* will keep you up to date. with numerous interesting jobsite reports.



- TT will produce and publish your jobsite reports in the trade press free of charge.



- exclusive access to our *trade portal*  
[www.nodig-bau.de](http://www.nodig-bau.de)  
[www.nodig-construction.com](http://www.nodig-construction.com)  
 with a lot of valuable information



• **Strongly innovative**

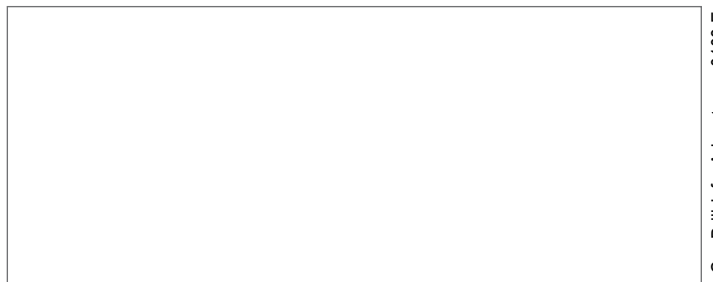
TT is a pioneer in the development of trenchless installation technologies TT is a strongly innovative company ranking among the "Hidden Champions, which has introduced many innovative and profitable developments. TT currently owns 350 patents.



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