Advantages GRUNDOMAT

Worldwide for over 40 years unchallenged the most sold soil displacement hammer.

There are reasons for this.

- The target precision, which has not been achieved by anyone else in penetratable soils (even in stony soils) is the main reason.
- No other manufacturer can claim 40 years experience in the mole technology field.

The target precision is secured by the twin-stroke mode, which means that the piston:
  
a) strikes the movable multi-cutter cone first, which moves 6 mm forward and
b) then the casing

"Hammer Head hammers" do not contain a return spring, which allows the head to return back to it’s initial position. The hammers with “active heads” act as one-piece, rigid machine systems (see drawing) and can not produce the full thrust force of the twin-stroke method. Furthermore the chisel and multi-cutter cone are screwed together. The piston strokes to the chisel strain the threading, which can easily lead to breakages.

Indication of soil displacement hammers from other manufacturers:
Advantages GRUNDOMAT

The mole is a market symbol and also a role model for the GRUNDOMAT. The mole’s muzzle is the most important organ for feeling its way underground – just like the movable stepped head of the GRUNDOMAT.
Advantages GRUNDOMAT

- **Target precision**
  
  Thrust forces overcome the highest resistance and casing friction is easier to overcome due to the concentrated forces inducted.

  ➡️ **High performance / Thrust force**

  Indication of soil displacement hammers from _other_ manufacturers:

- **Movable multi-cutter cone**
  
  The thrust energy of "Hammerhead hammers" is not inducted efficiently. With one stroke the soil must be penetrated and the resistance force on the casing must be surpassed.

  ➡️ **Lower performance / Thrust force**

- **Alignment and adjustment**
  
  - The main factor for target precision is the alignment with the telescopic _aiming frame_ (parallel). From an invisible bore line a visible alignment line appears.
  
  - The _starting cradle_ allows the soil displacement hammer to be precisely adjusted laterally and vertically. A precise target bore can be expected without any difficulties.

- **Soil displacement / distances**
  
  Soil displacement hammers can only be used in penetratable soil (with small rocks and boulders). Soil displacement hammers can be applied for pipes up to 200 mm diameter. A compactness of the soil and penetration is not possible for larger diameters.

  ➡️ **To prevent any roads arching upwards and damages, the over-cover and the distance to other service lines must be taken into account. (see drawing).**
Advantages of GRUNDOMAT

- The running stability is preserved in soft and wet soils with the saw-tooth type profile of the casing.

Trenchless
- the trenchless installation saves disruption and re-instatement of surfaces, e.g. road surfaces, pavements, gardens.
- it can be driven under garden walls, stairways and similar.
- damage to any road surfaces can be almost completely avoided
- also any trouble with the inhabitants

Main applications:
- House connections for water, gas and sewage (pressure pipes), Power, Telecom and glass-fibre cables, road crossings
- According to the soil displacement principle protection pipes up to max. ND 160 can be installed over lengths of up to approx. 30 m,
- Save on disruption and re-instatement costs, annoyance and traffic disturbance

Special Application fields:
- Pressing out steel pipes with an add-on cone
Advantages GRUNDOMAT

- Renewal of Sewage-house connections with the dynamic pipe bursting method.
  - The soil displacement hammer is pulled against the old pipe with a pulling cable
  - an expander head bursts the pipe open
  - New pipe (short pipe or long pipe sections) are pulled in simultaneously

- Installation of glass-fibre cables, gas and water pipes inside protection pipes
  - directly out of a cellar
  - with inner and outer wall-work sealing
  - Location of the glass-fibre cable is possible

- Ramming in steel pipes
  - With ram cones Grundomat soil displacement hammers can dynamically push in steel pipes (as protection or media pipes) > 200 mm.

- Vertical bores
  - for foundation or sheet piling
  - Anchor bores

- Pipes
  Grundomat 45 Pipe 38 mm
  55 45
  65 50
  75 63
  85 75
  95 85
  110 90
  130 110
  145 125
  160 150
  180 160

With the Grundomat soil displacement hammers all plastic pipes (short and long pipes, socket-less made of PE, PVC, filter pipes etc.) can be pulled in immediately or later.
Advantages GRUNDOMAT

**General machine advantages**
- wide product range
- twin stroke propulsion for a higher precision in stony soils
- short construction lengths
- light-weight,
- easy to handle,
- high stroke performance
- low air consumption due to tight seals
- toothed casing for better running stability in soft soils
- easy to overcome high resistance and casing friction

**TYPE 45 mm**
- Length 979 mm • Weight 8 kg • No. of strokes (min⁻¹) 570

**TYPE 55 mm**
- Length 1103 mm • Weight 13.5 kg • No. of strokes (min⁻¹) 510

Thrust control stud
- Reverse by a simple quarter turn of the hose

**TYPE 65 mm**
- Length 1323 mm • Weight 25 kg • No. of strokes (min⁻¹) 470

**TYPE 75 mm**
- Length 1443 mm • Weight 34 kg • No. of strokes (min⁻¹) 420

**TYPE 85 mm**
- Length 1540 mm • Weight 46 kg • No. of strokes (min⁻¹) 390

**TYPE 95 mm**
- Length 1732 mm • Weight 64 kg • No. of strokes (min⁻¹) 315

**TYPE 110 mm**
- Length 1685 mm • Weight 96 kg • No. of strokes (min⁻¹) 280

**TYPE 130 mm**
- Length 1750 mm • Weight 117 kg • No. of strokes (min⁻¹) 350 - also with thrust control stud

**TYPE 145 mm**
- Length 1986 mm • Weight 168 kg • No. of strokes (min⁻¹) 330

Reverse control stud
- up to Grundomat 130 the reverse control is carried out during the operation with a 1/4 turn of the hose.
- from Grundomat 130 the reverse control is carried out during the operation with a hand lever.

**TYPE 160 mm**
- Length 2002 mm • Weight 198 kg • No. of strokes (min⁻¹) 330

**TYPE 180 mm**
- Length 2221 mm • Weight 260 kg • No. of strokes (min⁻¹) 280

**Reverse control stud**
- all machines fastened with lock pins making it easy to exchange the heads and carry out maintenance
- no tension under the soil due to a balanced wall thickness
- all soil displacement hammers have a reverse control stud and can be easily switched over under pressure
Advantages GRUNDOMAT

Quality advantages

- **top production quality Made in Germany**
  Chisel, multi-cuttercone and piston undergo an extensive hardness process for extreme strains

- **Corrosive protection**: Casing hard chromed on inside and outside, piston nitrated and phosphated, multi-cuttercone galvanised

- for an **optimal running** of the piston the inside casing is cleanly honed.

- **the piston** is stored in high quality *slide tapes*, has there a higher degree of effect and no friction caused by metal rubbing against metal

- easy to exchange seals for an **optimal and low air consumption**

Production technology

- highest precision during production of all components with CNC-steered production technology.

- TT produces all machine components in-house

Quality check

- all Grundomat-soil displacement hammer are checked on the test stand for air consumption, number of strokes and piston strike.

- **high safety standard**
  All TT-machines are in accordance with the valid EU-guidelines and have been **CE-certified** and in addition have been checked for working safety by the civil engineering board.
Advantages GRUNDOMAT

- **Lowering costs with quality advantages**
  over a long term period quality for higher strains and longer service life pays.

- **Customer survey from 2008**
  At the customer training sessions this year over 549 Grundomat customers have been asked to answer questions.

  The results show that the following are either satisfied or very satisfied
  - with the **target precision**: 94 %
  - with the **penetration power**: 91 %
  - with the **maintenance friendliness**: 89 %
  - with the low **wear and tear**: 87 %
  - with the **rigidity**: 89 %
  - with the long **service life**: 85 %

  97 % of customers, who had the chance to compare with competitor machines, indicate that the Grundomat machines are better than those from other manufacturers.

  92% also indicated that the price-performance ratio was acceptable.

- **Maintenance friendliness: Grundomat**
  - simple assembly and disassembly of the stepped head with lock pins even on site
  - therefore simple cleaning process. checking and exchange of seals
  - high operation safety
  - Service intervals after approx. **150 h**
  - Return cone / casing end: total cross-section for exhaust remains intact

  "Hammer Head soil-displacement hammers"
  Head screwing and head cone are difficult to be removed from the chisel

  After approx. 30 h

  Due to the small cross-section the exhaust blocks and lowers the degree of effectiveness.

- **high product image** for Grundomat-soil displacement hammers
  - well known market symbol
  - World market leader
  - well known to a high degree
  - known for high quality and reliability
  - since 1970 a pioneer and innovator among the soil displacement hammer manufacturers
Advantages GRUNDOMAT

• Important accessories

Accessories for the pipe installation
- Direct installation of PE-pipes

• Subsequent installation of PE-pipes

• Direct installation of PVC pipes

• Quality hoses
  are non conductive and give added safety.
  Special couplings can not loosen by themselves.

• Lubrication and anti-freeze
  The expanded exhaust when applied to all soil displacement hammers can lead to freezing even from +7° outer temperatures and a blockage of the hammer.
  TT prevents this:
  - with lubricators and the
  - bio-degradable Grundo-Oil with anti-freeze effect as well as for an optimal coating process for corrosive protection
  - when working in Winter conditions with Unitherm, which heats the compressed air flowing and preventing any freezing.
**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**

- Grundodrill bore rigs, serially with auto-bore and performance regulator, pre-adapted for rock drilling
- 20 years experience
- Steerable small bore rigs Grundopit specially constructed for new Installations of house connections (Please ask for a special brochure)

- Wide product range also for Pipe renewals according to the **pipe-bursting** method.

- The machine technology can also be applied for **swagelining** and **relining**. (Please ask for a special brochure)

- The ‘**Large Bursting Rigs**’ can renew pipes up to 1000 mm diameter. The 1250 CP has a twin-stroke as a special feature, which means that the rods can be pulled in without any interruption.
Advantages GRUNDOMAT

- The Grundobore 200 S is a pilot steered Bore-press unit, which has been developed specially for the installation of open slope pipes for house connections. The machine can be started either out of a shaft or starting pit.

- **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.

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

• Tractuell customer magazine will keep you up to date with numerous interesting jobsite reports.

• TT produces and publishes your jobsite reports in the trade press free of charge.

• exclusive access to our trade portal
  www.nodig-bau.de
  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.

THE ONLY CHOICE FOR PERFECT PIPE INSTALLATIONS

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