



**GRUNDOMAT** - Soil displacement hammers up to Ø 180 mm - for more than 35 years



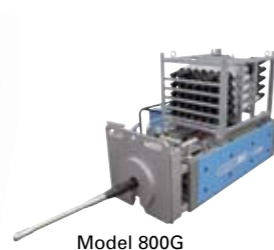
**GRUNDOSTEER** - The first guided mole bores up to Ø 63 mm



**GRUNDORAM** - Steel pipe rammers for steel pipes up to Ø 4000 mm



**GRUNDOCRACK** - Dynamic pipe bursting Pipe replacement up to Ø 1000 mm



Model 800G



Model 2500G



Model 400S

**GRUNDOBURST** - Static pipe bursting Models: 400G + S, 800, 1250 and 2500 G Pipe replacement up to Ø 1000 mm



Model 200S (manhole version)

**GRUNDOBORE** - Auger boring systems pilot steered, e. g. for gradient pipes Model 200S and 400



Model 4X



Model 7X



Model 15N



Model 25N

**GRUNDOPIT** - "P"-Family Models: Standard, Power, Shaft, Mini boring systems for pit launch 4 t pulling force, bores up to Ø 180 mm



Geodrill 20V



Geodrill 4R

**GEODRILL** - Boring systems for extracting geothermal heat Model Geodrill 20V for vertical bores and 4R for radial bores

**GRUNDODRILL** - "X"-Family HDD systems, Models 4X, 7Xplus TD, 10, 13 and 15X TD 4 -16 t thrust/pulling force, bores up to Ø 450 mm 7X with or without weather protection

**GRUNDODRILL** - "N" Family HDD systems for special requirements 15 t thrust/pulling force, 2 t torque reserve Bores up to Ø 600 mm, bore lengths up to 400 m



**PRIME DRILLING** - Large HDD rigs up to 600 t pulling force, bores up to Ø 2000 mm



**FOECKERSPERGER** - Pipe and cable plows sales cooperation for the international market



Grundopit Schacht

# TT-Pit-Systems

Grundopit steerable mini bore rigs



THE ONLY CHOICE FOR PERFECT PIPE INSTALLATIONS

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Subject to change!

Powerful models for  
house connections



TRACTO-TECHNIK

# VARIETY

## Grundopit 'Standard's

### The Grundopit family ... What they have in common

Practical job site experience has shown that steerable mini bore rigs have to be applied,

- when space conditions are restricted,
- when complicated house connections have to be installed but non-steered soil displacement hammers cannot be used due to the terrain,
- when a quick, clean, precise and economic solution is required,
- when open-trenching should be avoided or is actually impossible to use and
- when controlled drilling is required for safety reasons.

The main application is the subsequent installation of gas and tele-communication house connections in protection pipes up to OD 63. Parallel installations, street and small inshore water crossings are also possible.

- Depending on the model, Grundopit is started from the pit or out of a manhole.
- Depending on the capacity of the machine, the maximum upsizing is 200 mm Ø.
- Depending on the equipment used, Grundopit can also be applied in tough soils with a hammer bore head, which is driven by a hydraulic/pneumatic combination.
- The Grundopit can work either with a simple water-polymer or a Bentonite suspension, depending on requirements. A choice of suitable mixing systems is available.

The optimum system for beginners is doubtlessly the standard version, which can be upgraded into the power version due to the TT modular design system.



Location of the bore head, arrival and pipe pulling.



### ... Specifications

- max. torque 600 Nm
- especially suitable for house connections
- max. bore length (depending on ground and pipe) < 50 m
- max. upsizing diameter 150 mm, max. pipe diameter 110 mm
- 60 kN thrust and 40 kN pull back
- compact mini mixing system (200 l) for water / polymer suspension
- compact hydraulic power unit 13 kW for bore rig and mixing system

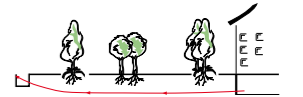
### ... Characteristics

- Also works with just water
- The complete unit can be loaded onto a trailer 3.50 x 1.70 m for secure transportation
- Can be disassembled into three parts

### ... Functions

- Patented rod connection\* for rapid rod exchange. The rods are only screwed together once and simply placed into the rear rotation drive socket.

\*goes for all models



House connections underneath front gardens, unpaved surfaces etc.



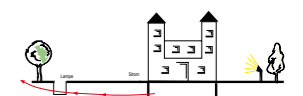
House connections underneath staircases, walls, slopes, in terrains which are not easily accessible



House connections from sout of manholes to buildings



Line installations of any kind in parks, on golf courses, beneath streams etc.



Installation of illumination facilities



Hydraulic unit, type TT M9



Water tank



Water pump

Rod box



Bore rig

Grundopit is applicable even in rocky soils.



Connection to the sewer network



Transport of the boring equipment

## Grundopit 'Power'

### ... There's a lot inside

On unpaved pathways, in inaccessible terrains or with ice and snow on the road, drivers appreciate the all-wheel drive. The bore crew also has to be able to react quickly in certain circumstances. In those cases, it is always better to have 'a little bit more underneath the hood'. This provides security and improves the chances of reaching the goal.

The difficult pilot bore conditions in heavy soils call for the application of Grundopit 'Power'. Compared with the Grundopit 'Standard', using the combined drive KA 38 increases the Grundopit performance greatly. The torque is increased from 600 to 1000 Nm. The simultaneous supply of compressed air allows operation of the hammer bore head. When it meets with resistance (larger stone inclusions, solid rock, building rubble or brickwork), the hammer effect is activated automatically, thus guaranteeing a smashing success.

A professionally composed drilling fluid mixed with the high-capacity mixing and pumping unit MA 09 guarantees the successful pulling in of pipes up to 160 mm Ø in lengths of < 80 m.

The MA 09, which can also be used for other bore rigs, can be driven with the hydraulic aggregate of the Grundopit 'Standard', Type LTT 40 P, or with the combined aggregate KA 38.



Combination drive KA 38 with compressed air and hydraulic connections

### ... Specifications

- max. torque **1000 Nm**.
- especially suitable for house connections but also for crossings, parallel bores etc.
- max. bore length (soil and pipe dependent) < 80 m
- max. upsizing diameter 200 mm, max. pipe Ø 160 mm
- 60 kN thrust and 40 kN pull back
- high-capacity mixing and pumping unit MA 09 (1100 l)
- hydraulic/pneumatic drive aggregate 37. kW; ompressed air 1.7 m<sup>3</sup> at 10 bar

### ... Characteristics

- Application of the air-driven hammer bore head for optimal thrust in various soils, operation is only possible with KA 38.
- If the hammer bore head meets with resistance (larger stone inclusions, solid rock, rubble deposits or brickwork), the hammer effect is activated automatically.

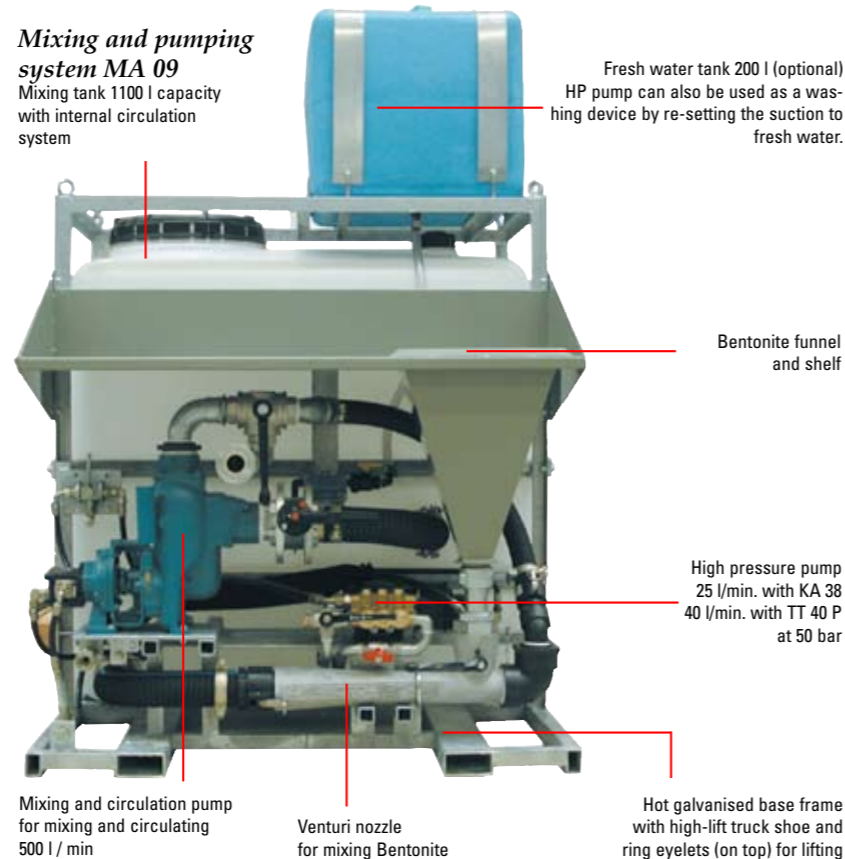


The hammer bore head boring through a concrete wall

### Mixing and pumping system MA 09

Mixing tank 1100 l capacity with internal circulation system

Fresh water tank 200 l (optional) HP pump can also be used as a washing device by re-setting the suction to fresh water.



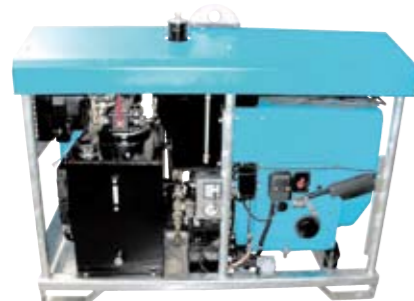
Bentonite funnel and shelf

High pressure pump 25 l/min. with KA 38 40 l/min. with TT 40 P at 50 bar

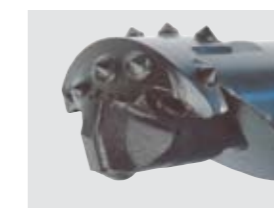
Mixing and circulation pump for mixing and circulating 500 l / min

Venturi nozzle for mixing Bentonite

Hot galvanised base frame with high-lift truck shoe and ring eyelets (on top) for lifting



Hydraulic unit TT B20





## Grundopit 'Manhole'



### Confined space...

With Grundopit 'Manhole' fibre optics can be installed in protection pipes ND 50 (out of a pit and into a cellar) or in protection pipes ND 100 (from manhole to manhole) for the first time without trenches.

And this is the way it works: The bore rig is set up on a working platform, which has been positioned and secured in the manhole beforehand. The working platform, pushed out by hydraulics, adapts itself to the inner diameter of the manhole utilising the support given by the manhole walls. Additional holding ropes can be used to secure the working platform.

First of all a core hole bore, connected by an adapter, bores a 150 mm hole through the manhole wall (small photo, below, right).

After this the tool is exchanged, the standard bore head or the specially designed hammer bore head for tough ground conditions is screwed to the 50 cm long drill rods. Then the rods are thrust forward swiftly, the bore course is constantly monitored and corrected, if required. Drilling fluid is usually necessary, it can be prepared in the drilling fluid mixing unit belonging to the Grundopit machine. After the drilling fluid has been used, it is collected in a container for disposal. The bore head can "drive" via the pre-drilled core hole bore, through the house wall into the cellar. After the pilot bore the bore hole is expanded and the protection pipe is pulled in.

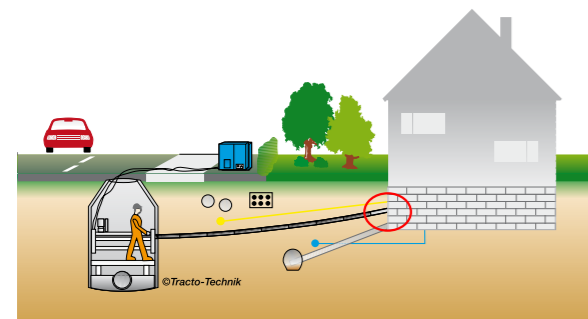


Setting up the working platform and the Grundopit-Manhole

Start from the manhole to the service room of the building



The Grundopit establishing the core hole bore from out of a gully hole. Operation with KA 38.



### ... Specifications

- max. torque **1000 Nm**
- especially suitable for house connections in order to connect **fibre optic cables** installed in sewer lines from out of manholes
- is started from the manhole after having performed a core bore
- connection right into the service area of the building
- max. upsizing Ø 150 mm, max. pipe Ø 125 mm  
max. bore length (ground and pipe dependant) < 50 m
- 40 kN thrust and pull back
- compact mixing system MA 09 (1100 l) with 25 l/min. Bentonite-HP pump
- hydraulic / pneumatic drive combination 37.5 kW, compressed air 1.7 m<sup>3</sup> at 10 bar
- application of the air-driven hammer bore head in heavy soils with stone inclusions, backfill etc.

### ...Characteristics

- Application in min. space, L x W x H: 950 x 430 x 450 mm
- Application in manholes from 1000 mm Ø on



Application even possible on the outside of the pit

View of the drill rig

## ... spoilt for choice

Grundopit is a bore rig offering various possible combinations and applications.

Depending on the purpose of the bore, pipe diameter, soil conditions, bore length and degree of difficulty, you can choose among 3 power classes (Standard, Power or Manhole version).



Einfache Bedienung



A wide variety of drilling tools is available (see TT-System accessories).



You can pull in single pipes or pipe bundles



## ... trenchless - right into your cellar

Usually, the pilot bore starts in the connection pit or from the manhole, if a house connection is being installed subsequently. The bore head is located in front of the cellar wall from the supply area inside, then it is over-bored from inside with a core hole bore. When the boring tools have been changed, the pipe, equipped with a special wall duct at its end to seal the cellar wall from outside and within, is pulled in.

## Advantages of the Grundopit technique

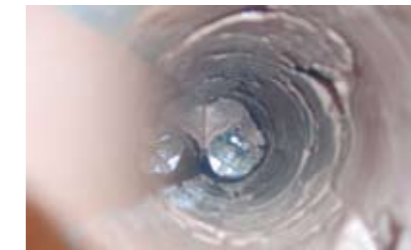
- flexible application due to the optimal adaptation to different working conditions
- high installation precision, quality and safety
- thanks to the trenchless installation method damaged surfaces are avoided
- the air-driven add-on hammer bore head enables thrust in heavy soils (Pit Power and Pit Manhole only)
- hydraulically and compressed air-driven combination drive (Pit Power and Pit Manhole only)
- by using different mixing systems, the Grundopit can be operated with a simple water-polymer or a Bentonite suspension
- leak-proof wall duct system
- can be started from manholes sized 1 m
- add-on core bore drill (Pit Manhole only)



Establishing the bore through the wall:  
1. Location of the bore head in front of the cellar wall



2. Core bore



3. Re-boring with the bore head



4. "Driving in" the bore head into the cellar



5. Tool exchange / pipe pulling



Wall lead-through



6. Mounting the wall lead-through



7. Completed connection

Equipment	● Standard ○ Optional	Pit Standard 600 Nm	Pit Power 1000 Nm	Pit Manhole 1000 Nm
<b>Drive unit</b> (simple/combined)				
* hydraulic 13 kW	●			
* hydraulic 37,5 kW / pneumatic 1,7 m <sup>3</sup> /min.	○		●	●
Detection system RD 385	●	●	●	●
Hammer bore head (air-driven)	○		○	○
Core drill (hydraulically driven)				●
<b>Mixing unit</b>				
* Water / Polymer 200 l Mixing tank	●			
* Bentonite 1100 l Mixing tank	○		●	●
<b>Working platform</b> suitable for manholes				●

## ... Reliable

The sophisticated technology and the solid construction of all GRUNDOPIT models guarantee reliable functioning and a long service life, which is being demonstrated by a large number of challenging practical applications.

### Connection to the sewer network

**Place:** Unterschwarzen / Germany

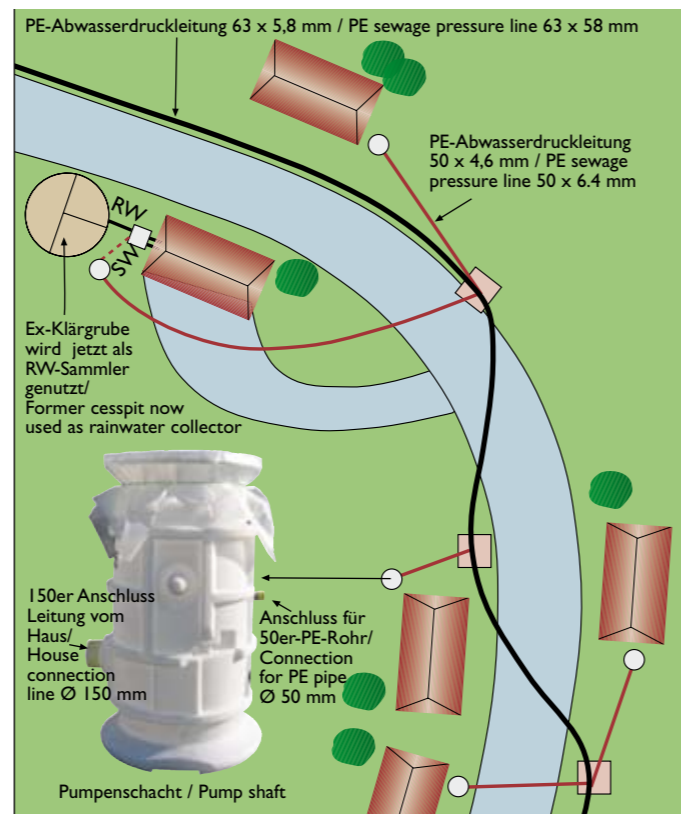
**New pipe:** 1 x PE-HD, 63 x 5,8 mm (sewer pipe)  
8 x PE-HD 50 x 4,6 mm (house connections)

**Machine:** GRUNDOPIT 40/60

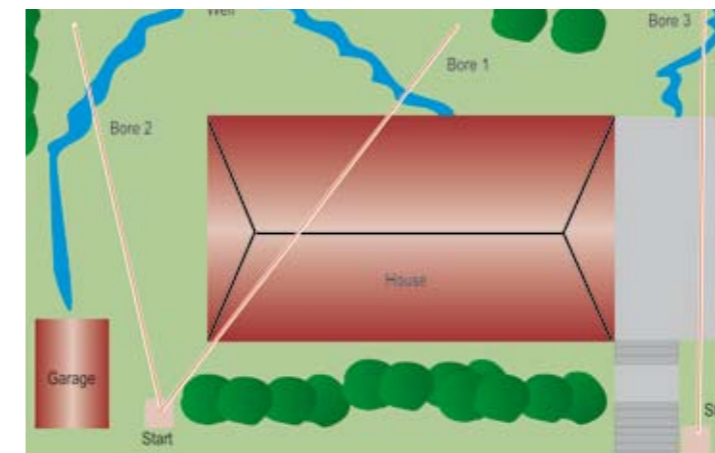
**Duration:** 2 - 3 house connections per day

**Description:**

Installation of a sewer pressure pipe over 800 m length to connect 8 residential houses to the public sewer network. The bore path lead across a forest path, underneath an access road and an adjacent brook to the next village.



### Installation of drainage pipes against pressing slope water



**Place:** Finnentrop-Lenhausen / Germany

**New pipe:** Slotted drainage pipe Ø 97 mm

**Machine:** GRUNDOPIT 40/60

**Duration:** 1,5 working days

**Description:**

Production of three drainage bores, 25 m length each, to drain off pressing slope water which was soaking the cellar of a residential house. Installing the pipes was rather difficult due to the location of the estate on the slope, as well as the diagonal undercrossing of the house, the terrace and the greens.



### Installation of house connections with Grundopit S (manhole version)

**Place:** Bedford, England

**New pipe:** 5 x PE Ø DA 110 mm

**Machine:** GRUNDOPIT S

**Duration:** 3 working days

**Description:**

Installation of sewer house connections from out of a manhole as gradient lines over lengths between 10 and 17 m. In order to be able to establish the pilot bore and the lateral connections, a concrete core bore from out of the manhole was made. Compared to open trenching at least 5 working days and 1/6 of the cost were saved.

