

TRACTO

GRUNDORAM
THE DRIVING
FORCE

**Further Information
on GRUNDORAM**

TRACTO.COM/GRUNDORAM



ADVANCED TRENCHLESS TECHNOLOGY

GRUNDORAM HARD AS NAILS

The pneumatically driven GRUNDORAM horizontal ramming machines can develop impact energies up to 40,000 J. Due to the galvanised one-piece machine housing and the elaborately tempered piston, the machine technology is especially robust, reliable and durable. The GRUNDORAM horizontal rammers can be used in all types of soil with the exception of muddy areas, swamps and compact non-displaceable soils, for numerous types of applications.

The most common GRUNDORAM application is the horizontal installation of steel pipes up to ND 4,000 mm with dynamic impact and a small displacement volume. Steel pipes are used as media pipes, for example in pipeline construction or as casing pipes for bundling supply and waste disposal lines but also for building sub-

ways, smaller culverts and pipe roofs for a tunnel construction.

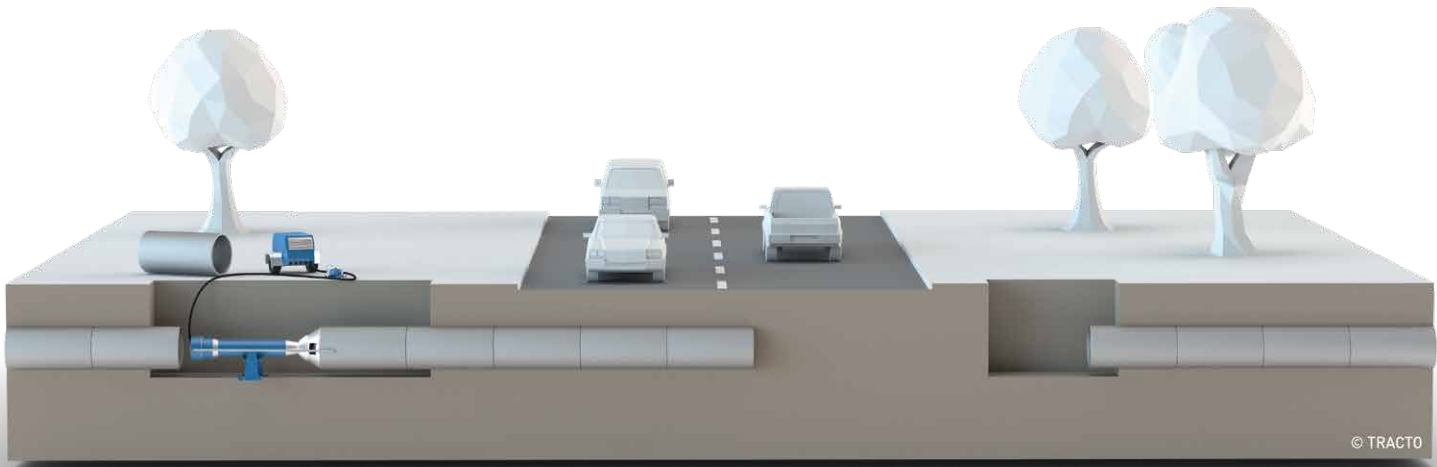
With the appropriate accessories, the GRUNDORAM horizontal rammers can also be used for vertical applications, to support HDD drilling (HDD Assist) and for dynamic pipe renewals.

GRUNDORAM
Application
videos at



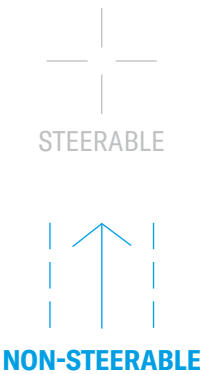
TRACTO.COM/
APPLICATIONS

APPLICATION

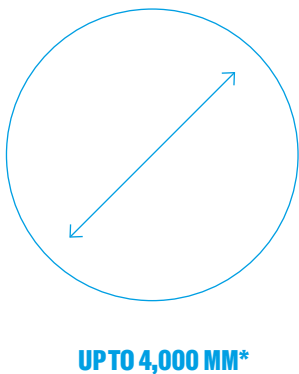


Dynamic pipe ramming

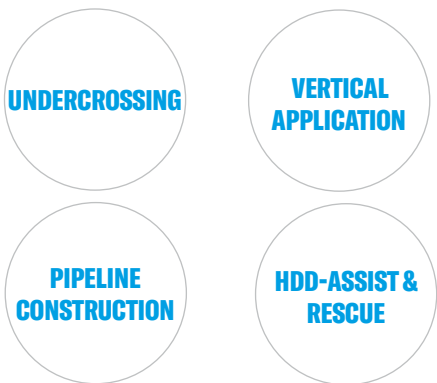
METHOD



PIPE DIAMETER

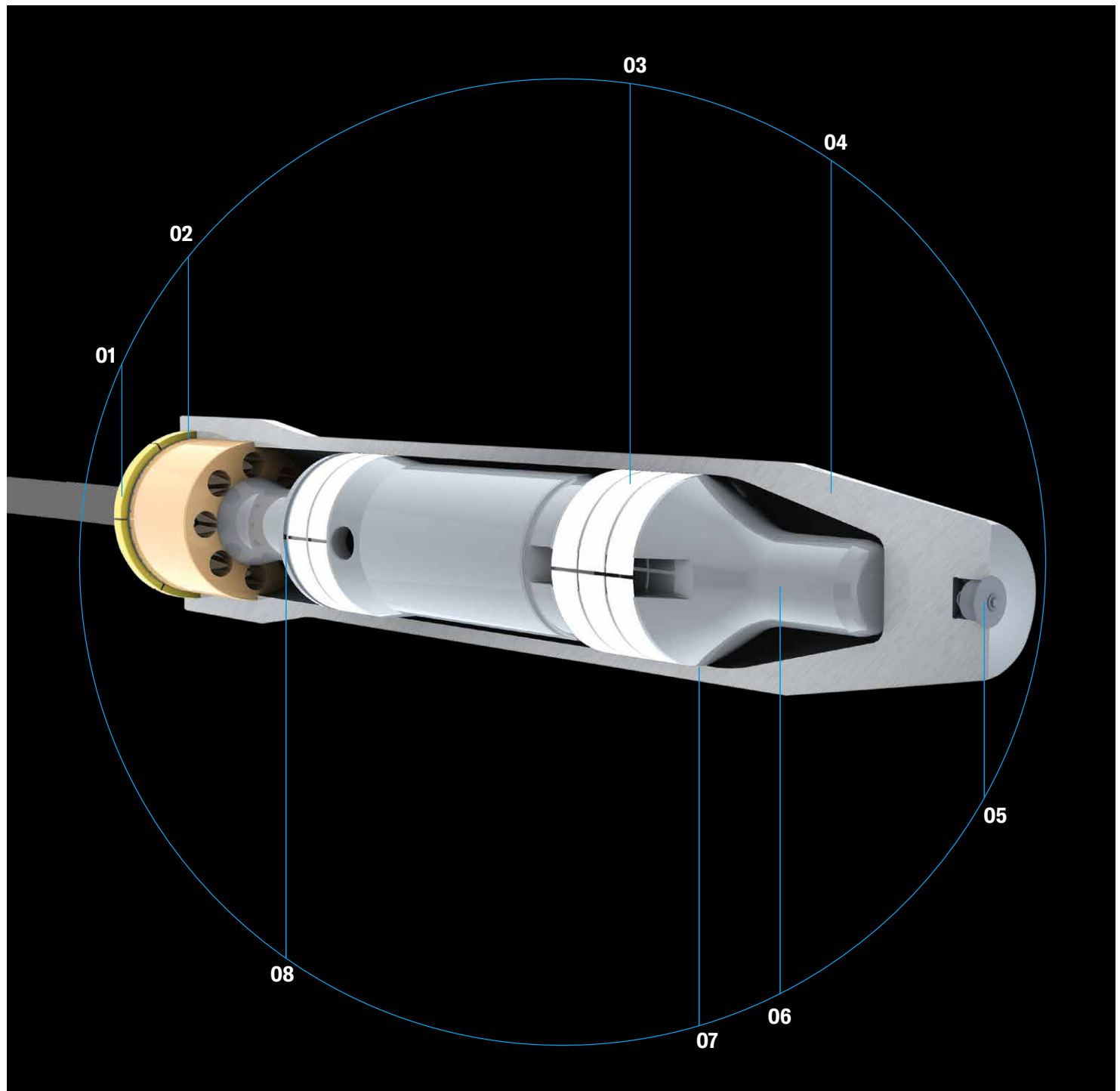


DYNAMIC PIPE INSTALLATION WITH RAMMING METHOD



* depending on soil

OVERVIEW



01 Segment rings for positive locking of the control unit

02 Permanently elastic mounted control stud – material friendly under high loads

03 Piston slide tapes prevent friction between piston and casing, reducing wear and tear

04 Solid, one-piece casing – highly resilient without seams or screw connections

05 Thread for screwing in a towing eye for pipe sanitation tasks

06 Piston seal rings reduce air consumption and therefore increase performance and efficiency

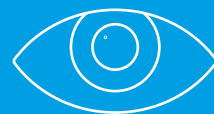
07 Inner casing chrome-plated to reduce wear for a long-lasting high performance

08 Solid, tempered piston for increased strength and longer service life

Wide range of accessories available

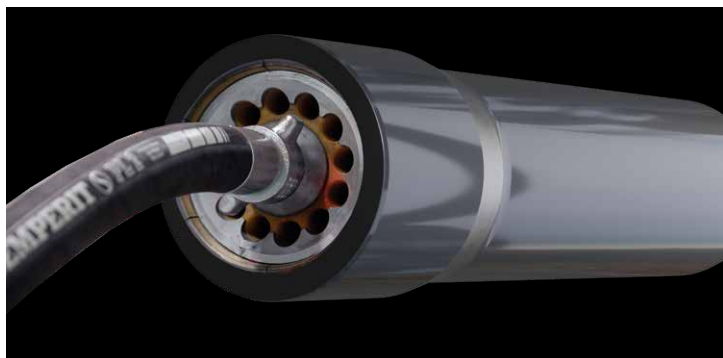
GRUNDORAM

ALL HIGHLIGHTS AT A GLANCE



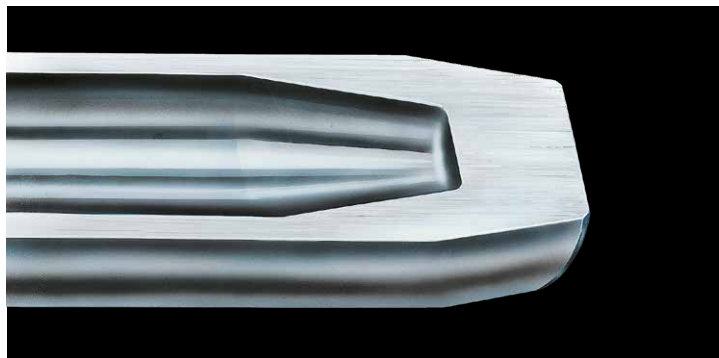
No material wear

The solid piston is mounted on several slide tapes which prevent material-wearing friction of metal on metal. Seal rings minimise air consumption, increase the performance level and therefore efficiency – therefore providing enormous thrust power.



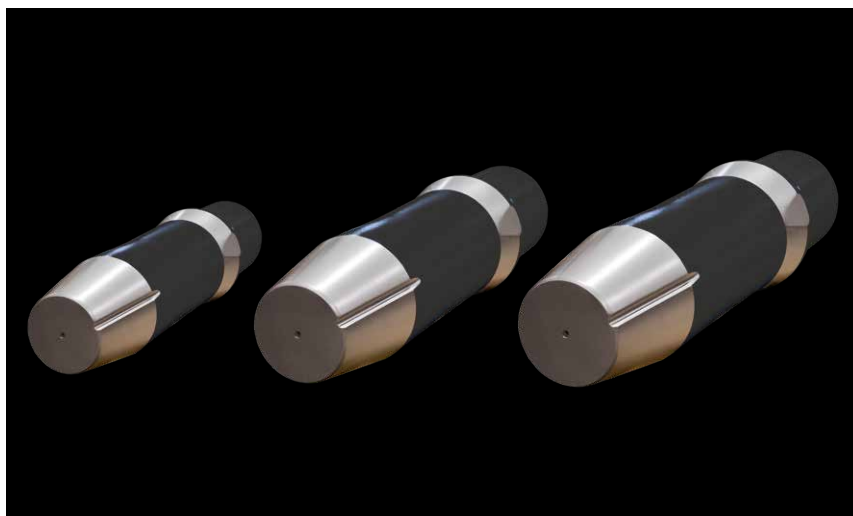
One-piece

The solid casing is produced in one-piece from a forging and galvanically treated. The precise deep-hole boring ensures direct force transmission from the piston to the casing head.



GRUNDORAM Mini-Machines

The short and powerful mini machines are ideal for propulsion in the pipe and therefore optimal when working in tight and inaccessible jobsites.

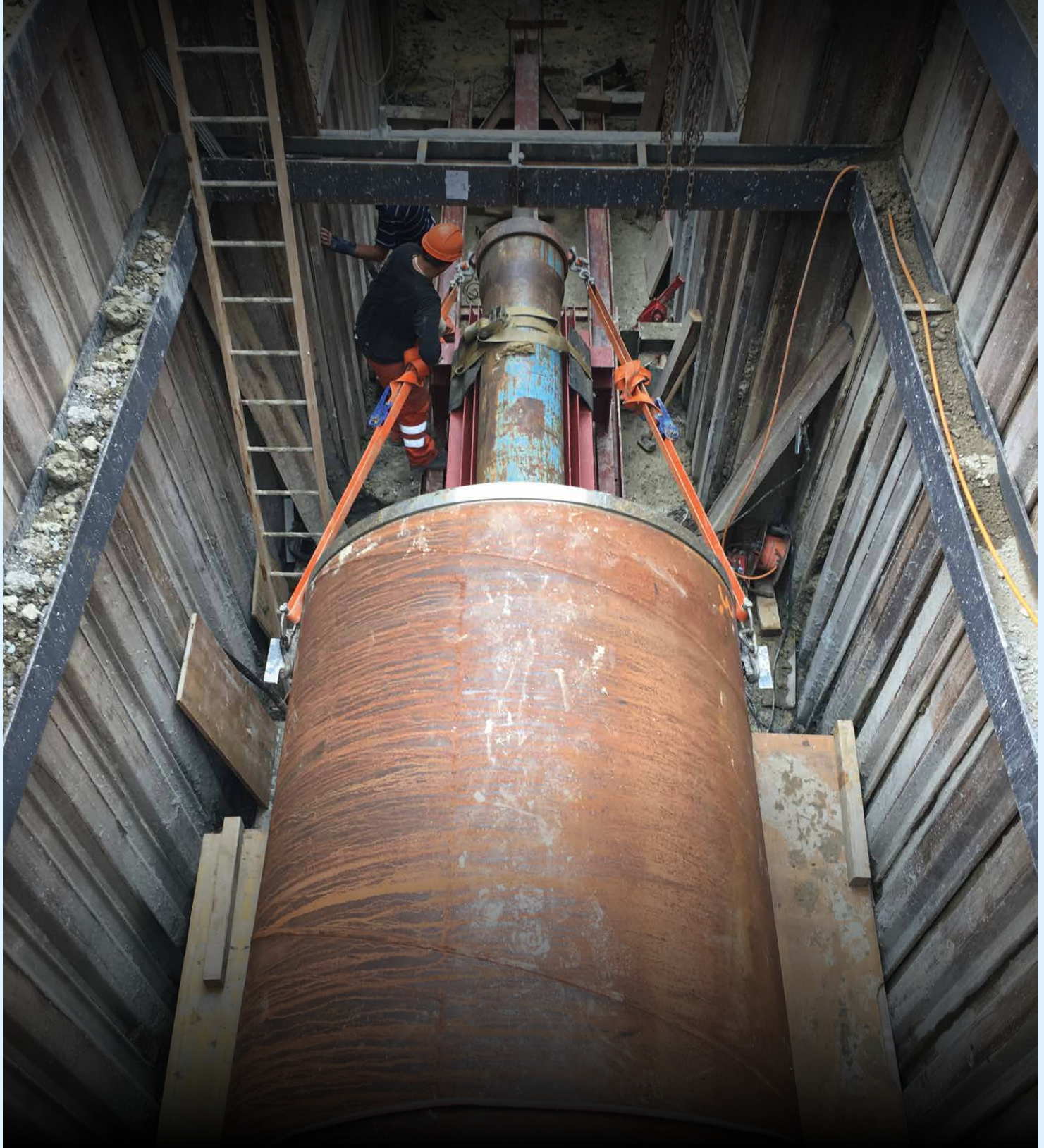


FUNCTIONS | ADVANTAGES

Dynamic steel pipe ramming

Dynamic pipe ramming with GRUNDORAM horizontal rammers enables the economic installation of casing or product pipes up to 4,000 mm diameter in soil classes 1-5 (partly even soil class 6 – easily soluble rock) underneath roads, railway tracks and rivers over lengths up to 100 m.

Target precision is achieved because the dynamic impact punches through the ground, destroying obstacles so they don't need to be displaced in one piece and pushed ahead. The soil is collected inside the open steel pipe, which is usually emptied using compressed air and/or water. The particular advantage of the TRACTO-rammers is the fact that press abutments are not required, which significantly reduces set-up times.



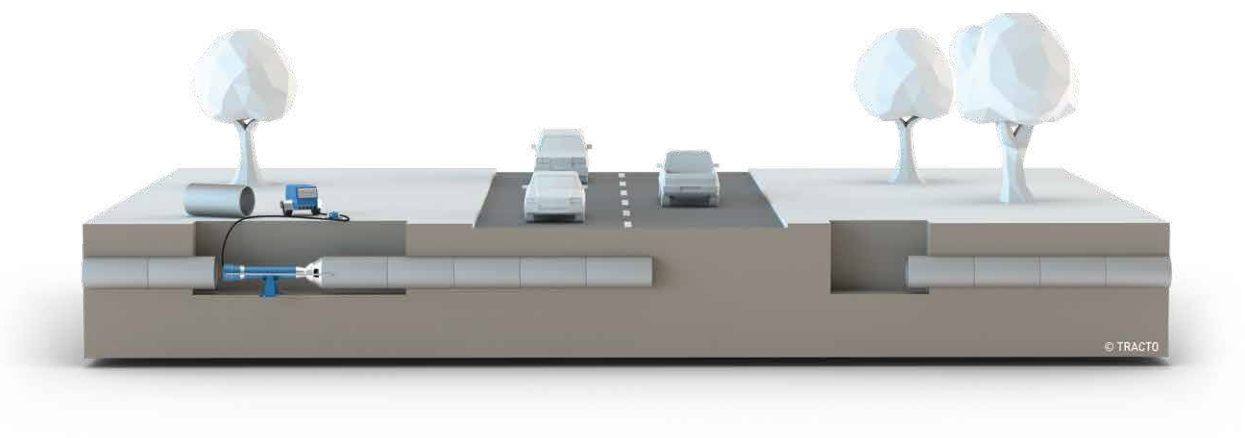
DYNAMIC STEEL PIPE RAMMING

MANY POSSIBILITIES – ONE MACHINE

The piston strikes inside the head of the one-piece housing of the rammer. Passing through the plug-on cone, the generated impact energy is transferred directly to the steel pipe casing, which is then driven steadily through the ground.

Pipe installation

The rammer is firmly connected to the pipe to be installed using an attachable cone before being aligned axially behind the pipe with the aid of the lifting cushion. Thanks to the soil removal adapter or cone, the soil inside the pipe can partially escape, while the pipe is being driven forward.

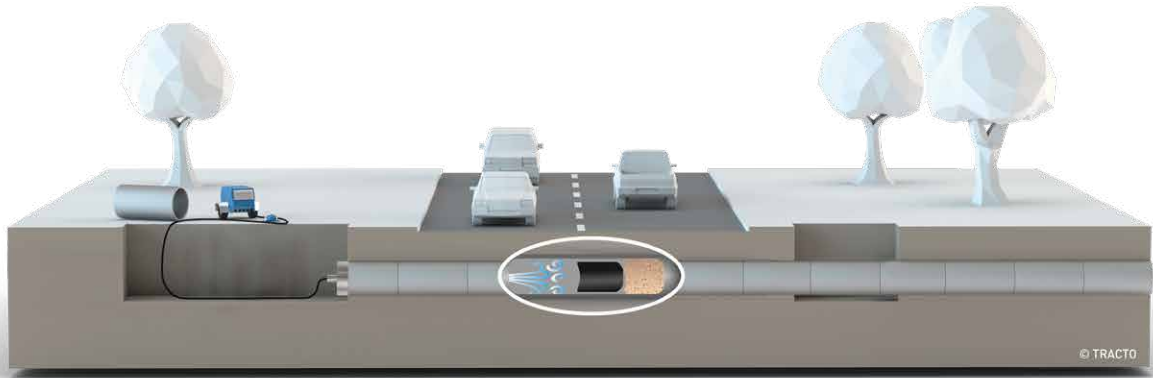


Method	Uncontrolled, dynamic pile driving
Pipe diameter	Up to 4,000 mm
Pipe materials	Steel
Soil classes	1 - 5

APPLICATIONS

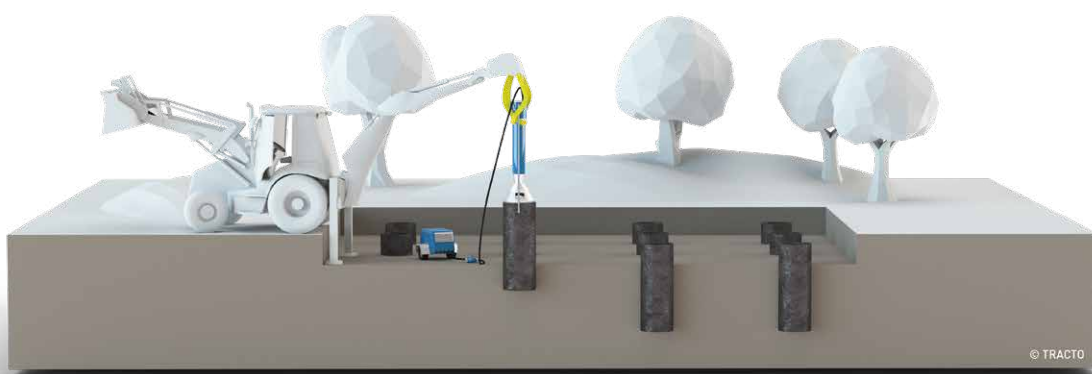
Soil removal

The soil, which is taken up by the open pipe during the ramming process, is finally expelled into the target pit using compressed air and/or water. Alternatively, the soil can either be drilled out, flushed out or, dredged out.



Vertical applications

When applied vertically, the pipe ramming method can be used for numerous applications.

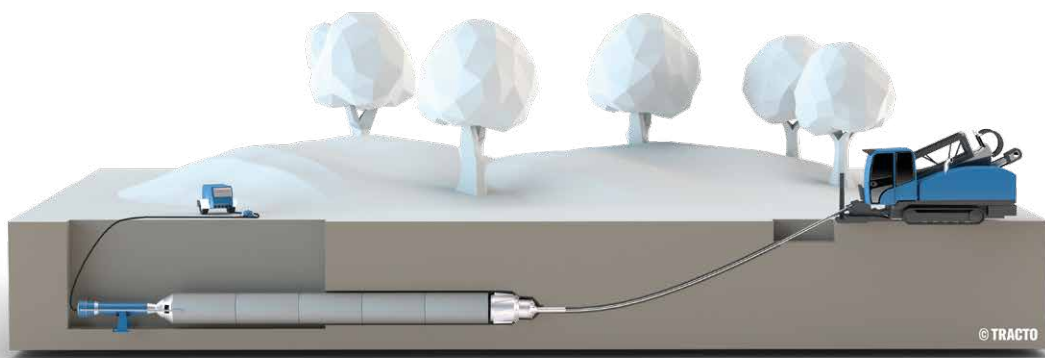


- **Foundations and pile foundations**
e.g. for overhead signs, noise barriers, safeguarding buildings etc
- **Well construction**
Vertical steel pipe ramming for well construction
Emptying with round grippers

SPECIAL APPLICATIONS

HDD ASSIST & RESCUE

HDD-ASSIST: PULL-BACK ASSIST



GRUNDORAM can provide dynamic support for an HDD project when pulling in steel pipes or loosening stuck pipes. The rammer is firmly attached to the steel pipe at the rear to ensure efficient energy transfer.

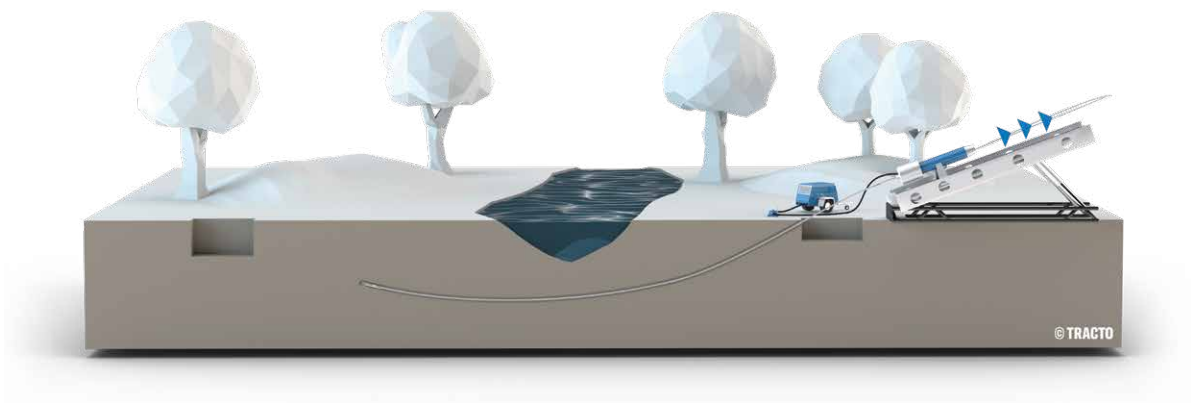
HDD-RESCUE: CONDUCTOR BARREL



Used in non-drillable soils, where the soil is too soft to support the borehole. A steel pipe is driven through the affected layer of soil and then removed. HDD drilling can then begin inside the pipe.

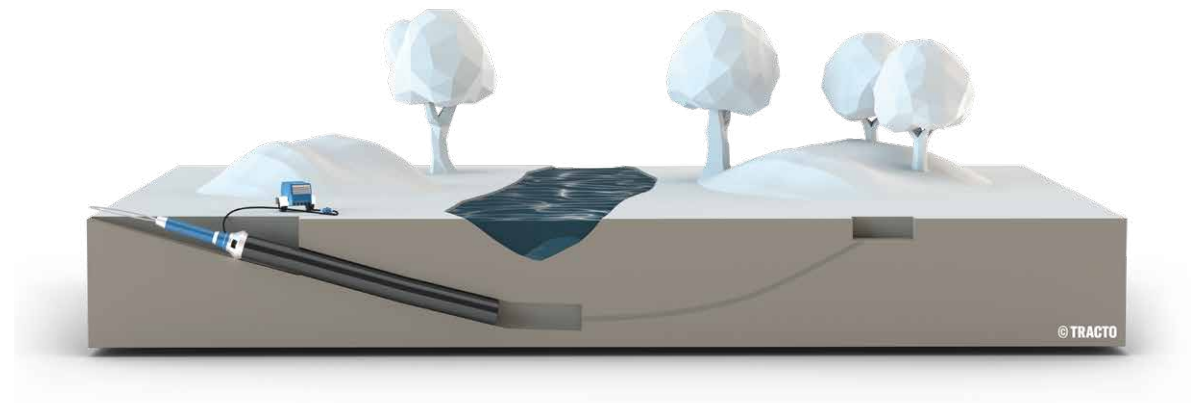
APPLICATIONS

HDD-ASSIST: DRILL ROD RECOVERY



Extraction of jammed drill rods using an adapter and dynamic ramming energy.

HDD-ASSIST: BORE SALVAGE



Recovery of stuck product or protection pipes after a failed HDD job.

VARIATIONS

GRUNDORAM STANDARD MACHINES



TECHNICAL DATA

GRUNDORAM- TYPE	ATLAS	TITAN	OLYMP	HERKULES	GIGANT	KOLOSS	GOLIATH	TAURUS	APOLLO
Machine-Ø	130 mm	145 mm	180 mm	216 mm	270 mm	350 mm	460 mm	600 mm	800 mm
Ø rear cone	145 mm	160 mm	195 mm	235 mm	300 mm	400 mm	510 mm	670 mm	900 mm
Length	1,453 mm	1,545 mm	1,690 mm	1,913 mm	2,010 mm	2,341 mm	2,852 mm	3,645 mm	4,400 mm
Weight	95 kg	137 kg	230 kg	368 kg	615 kg	1,180 kg	2,465 kg	4,800 kg	11,500 kg
Air consumption	2.7 m³/min	4.0 m³/min	4.5 m³/min	6.5 m³/min	12.0 m³/min	20.0 m³/min	35.0 m³/min	50.0 m³/min	100 m³/min
No. of strokes	320 min ⁻¹	310 min ⁻¹	280 min ⁻¹	340 min ⁻¹	310 min ⁻¹	220 min ⁻¹	180 min ⁻¹	180 min ⁻¹	180 min ⁻¹
Impact energy	420 J	800 J	890 J	1,440 J	2,860 J	6,820 J	11,600 J	18,600 J	40,500 J
From pipe size	50 DN	100 DN	100 DN	120 DN	200 DN	280 DN	380 DN	380 DN	600 DN

VARIATIONS

GRUNDORAM MINI MACHINES

MINI-ATLAS



MINI-OLYMP



MINI-GIGANT



- No abutment required – short set-up times
- One-piece, deep-hole drilled housing - high creep rupture strength and optimum energy transmission with maximum impact force and enormous thrust power
- Segmental machine lock with elastically suspended control – safe, positive locking design
- Service-friendly design with only one-sided machine closure
- Mini machines with shortened overall length for use in confined spaces, as well as reverse gear for simple and ergonomic loosening of the ramming accessory.

TECHNICAL DATA

GRUNDORAM-TYPE	MINI-ATLAS	MINI-OLYMP	MINI-GIGANT
Machine-Ø	125 mm	180 mm	270 mm
Ø rear cone	140 mm	230 mm	330 mm
Length	946 mm	1,080 mm	1,230 mm
Weight	60 kg	175 kg	460 kg
Air consumption	1.7 m ³ /min	3,5 m ³ /min	10.0 m ³ /min
No. of strokes	580 min ⁻¹	500 min ⁻¹	430 min ⁻¹
Impact energy	180 J	720 J	2,000 J
From pipe size	50 DN	100 DN	200 DN

GRUNDORAM FOR EVERY TASK

Accessories perfectly adapted to the ramming machine guarantee optimum progress in every type of soil. Robustness and durability go without saying.

PLUG-ON CONES



Using attachable taper-lock ram cones, the GRUNDORAM is firmly connected to the pipe to be installed.

IMPACT SEGMENTS



The multi-part impact segments prevent pipe end flare and improves the optimal induction of impact power.

SOIL REMOVAL ADAPTER



With a soil removal adapter or taper-lock ram cones, the soil inside the pipe can partially escape while the pipe is being driven forward.



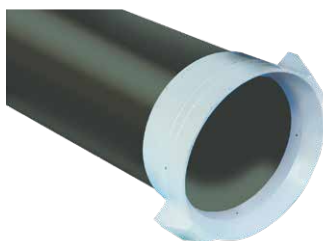
ACCESSORIES

CUTTING SHOE



Cutting shoes reinforce the cross section of the front-end pipe, protect the insulation of the pipe and reduce coat friction, both inside and outside.

LUBRICATING CUTTING SHOES



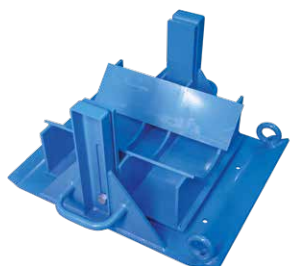
Lubricating cutting shoes additionally lubricate the pipe, inside and outside, thus reducing friction and facilitating the pipe drive.

THE 7 L OIL LUBRICATOR



Is connected in between the compressor and the machine to enable lubrication of the internal piston.

STARTING CRADLE WITH LIFTING CUSHION



With the lifting cushion positioned inside the starting cradle, the heavy ramming machines can be lifted and lowered without effort. Available in 4 versions, all with adequate lifting force.

PRESSURE PLATE WITH RIGID FOAM PLUG

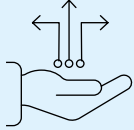


The pressure plate closes the end of the pipe, making it pressure resistant to enable pushing the soil core out. Depending on the type of soil, a foam plug may be necessary to seal the front.

Further accessories
available upon request.

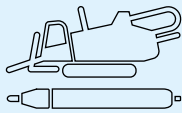
FULL SERVICE FOR TRENCHLESS TECHNOLOGY

Whether its before, during or after the purchase, whether in person or online – we are always at your side with advice and support. Our wide-ranged service is specially tailored to the requirements of trenchless pipe installations, so you can concentrate fully on your core business.



Digital Solutions

Our website offers you the whole world of trenchless technology in digital form. Find out more about our company, our products and their applications. Discover the digital tools for the HDD drilling technology and many other intelligent solutions. Always stay up to date by using the links to our social media channels. Or you can order machines, accessories and spare parts in our eSHOP – easy and conveniently via PC, smartphone or tablet.



Nodig Product Specialists

You can truly rely on our product specialists for all technical questions regarding the function and application of our steerable and non-steerable NODIG-systems. With comprehensive knowledge in each of their special fields, you can be sure they will find the best solution for your trenchless projects and advise you competently on setting up your jobsite.



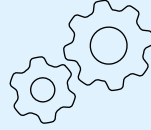
Financing

We offer attractive financing solutions for new and used machines to our customers and sales partners through the TRACTO-TECHNIK Finance GmbH. Be it financing, hire purchase, various types of leasing or insurance: we provide extensive expert advice, individually and personally, in order to find the tailored solution for you. Discretion goes without saying.



Training

Qualified training enables you to apply trenchless technology even more effectively and profitably. Our wide range of training courses for machine operators, construction professionals as well as planners and clients cover all aspects of NODIG technology, including special topics. Certified trainers also instruct you, in theory and practice according to your individual requirements, either at one of our numerous company locations, or directly on your own premises or online, independent of time and place.



Specialised Civil Engineering Service (Application Technology)

The specialised civil engineering service for application technology provides support for all your trenchless construction sites. Our experts demonstrate the steerable and non-steerable NODIG technology live in practical use, show your drilling teams how to use it or actively assist with special projects.



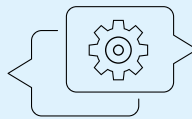
Geoservice

Precise knowledge of the soil is the key to successful trenchless projects. Our Geoservice team provides you with this professional knowledge. Our expertise puts you in a position to master every type of soil. Based on geoscientific maps and existing construction files, we supply information on the soil, which will help you with calculations or supplements.



Used Equipment

If you want to sell a used machine at an attractive price or are looking for the right equipment for your tasks, our full service for used NODIG machines will take the workload off your hands – from appraisal and price determination to professional repair and certification, through to achieving the best price for you via our used machine website with access to one of the world's largest construction machinery platforms.



After Sales

Via our worldwide service network we are always there for you, even after the purchase. A total of five TRACTO plants and seven customer centres in Germany, as well as our worldwide sister companies and sales partners guarantee fast supply of spare parts and immediate availability. Our competent service staff offer fast assistance, to ensure you don't lose any time.



**Discover
our service
solutions**



**TRACTO.COM/EN
SERVICE**

TRACTO-TECHNIK GMBH & CO. KG HEADQUARTERS

PAUL-SCHMIDT-STRASSE 2
57368 LENNESTADT, GERMANY
T +49 2723 808-0
F +49 2723 808-180
INFO@TRACTO.COM
TRACTO.COM/DE



TRACTO.COM



- TRACTO HEADQUARTERS
- TRACTO SISTER COMPANIES
- TRACTO DISTRIBUTORS

SWITZERLAND
TRACTO-TECHNIK SCHWEIZ AG
INDUSTRIESTRASSE 4
8360 ESCHLIKON TG, SCHWEIZ
T +41 79 8203897
CH@TRACTO.COM
TRACTO.COM/CH-FR

UNITED KINGDOM
TRACTO-TECHNIK UK LTD
10 WINDSOR ROAD
BEDFORD MK 42 9SU
T +44 1234 342566
F +44 1234 352184
INFO@TRACTO-TECHNIK.CO.UK
TRACTO.COM/UK

FRANCE
TRACTO-TECHNIK FRANCE S.A.R.L.
1/3 RUE DE LA PRAIRIE
F-77700 BAILLY ROMAINVILLIERS
T +33 1 60 42 49 40
F +33 1 60 42 49 43
FR@TRACTO.COM
TRACTO.COM/FR

USA
TT TECHNOLOGIES INC.
2020 EAST NEW YORK STREET
AURORA, IL. 60502
T +1 630 851 8200
F +1 630 851 8299
INFO@TTTECHNOLOGIES.COM
TTTECHNOLOGIES.COM

AUSTRALIA
TRACTO-TECHNIK AUSTRALIA PTY LTD.
10 ALICIAJAY CIRCUIT
LUSCOMBE, QLD 4207
T +61 7 3420 5455
AU@TRACTO.COM
TRACTO.COM/AU

MOROCCO
TRACTO-TECHNIK AFRIQUE S.A.R.L.
ROUTE DE TAMESNA 4022
POSTE 2044, 12220 TAMESNA
T +212 537 40 13 63 / 64
F +212 537 40 13 65
INFO@TRACTO-TECHNIK.MA
TRACTO.COM/MA

TRACTO ADVANCED TRENCHLESS TECHNOLOGY

TRACTO PARTNER:

Images, text and graphics subject to change. Some of the product or service designations listed below as well as depicted logos are registered trademarks of TRACTO and in these cases are subject to the respective applicable trademark law.