TRACTO

Information
on GRUNDOTIP
online

GRUNDOTIP
PUSH-IN SYSTEM FOR TIGHT-IN-PIPE RENEWAL

ADVANCED TRENCHLESS TECHNOLOGY

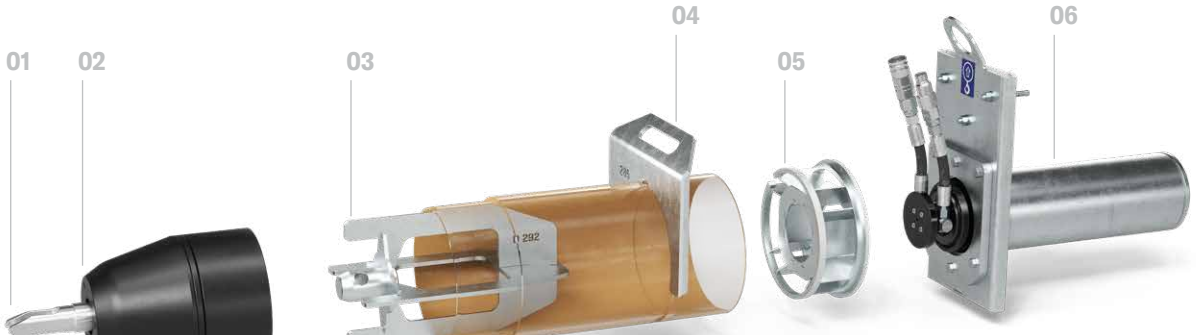
GRUNDOTIP
INSERT. PUSH. DONE.

GRUNDOTIP is an easy-to-use hydraulic push-in system for the straightforward pipe-in-pipe renewal of gravity sewers from ND 200 to ND 500 from inside a manhole using the Tight-In-Pipe method.

The TIP method works on a simple principle: from a starting manhole, new PP short pipes are pushed into the old pipe to be renewed segment by segment with GRUNDOTIP by means of hydraulic cylinders. A calibration head compensates for any existing deformations and restores the circular cross-section – regardless of the condition and structural integrity of the old pipe. The new pipe fits tightly inside the old pipe; the resulting minimal annular gap does not need to be filled. The result is a structurally self-supporting, tested new pipeline with a long service life within the existing route. To adapt to various installation situations, the GRUNDOTIP is available as a pipe cylinder, manhole cylinder and new pipe cylinder.

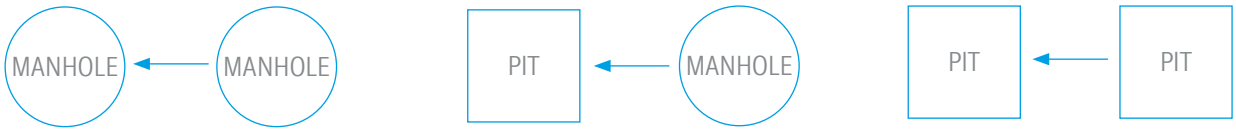
With GRUNDOTIP, TRACTO offers a flexible and practical solution for restoring damaged sewage pipes in the shortest possible time using a minimally invasive, trenchless method.

SYSTEM STRUCTURE



01 Pulling device
02 Expander
03 Guide mandrel
04 Stop plate
05 Pipe adapter
06 Pipe cylinder

APPLICATION



Application example: Renewal of a sewer pipe using the GRUNDOTIP pipe cylinder

OVERVIEW

The TIP method has proven to be an effective technique for sustainably rehabilitating severely damaged pipes, for example due to deformation, corrosion or leaks, where conventional CIPP lining methods are ineffective.
The slight reduction in cross-section resulting from pipe-in-pipe renewal is generally offset by the increased flow velocity in the new, smooth plastic pipes. Furthermore, the TIP method is safe to use and in line with current technical standards and regulations. Its cost-effectiveness and sustainability make it worthwhile for contractors and clients alike.

Advantages
- Straightforward method with short construction times
- High sustainability and cost-effectiveness
- Suitable for old pipes up to condition III A, regardless of material.
- Minimal annular gap that does not need to be filled
- Can also be used in hard-to-reach areas
- Circular profile is fully restored
- Independent pipe statics, regardless of the old pipe's condition
- Flexible application options and process variants (e.g. combination of thrust and tension with a bursting system)
- No risks such as creasing or water permeability, etc.
- Ideal for densely built-up areas as no soil is displaced

BEFORE

AFTER

With the TIP method, factory-manufactured and quality-controlled PP or PE-HD pipes are installed. They are structurally self-supporting and have a very long service life of up to 100 years. The single-grade, recyclable material is characterised by high dimensional stability and chemical resistance.

The individual pipe segments are connected via smooth push-fit sockets to form a force-fit joint. The joints are designed to withstand the high longitudinal and axial forces generated during hydraulic jacking. An integrated lip seal ensures permanent watertightness against external water infiltration.

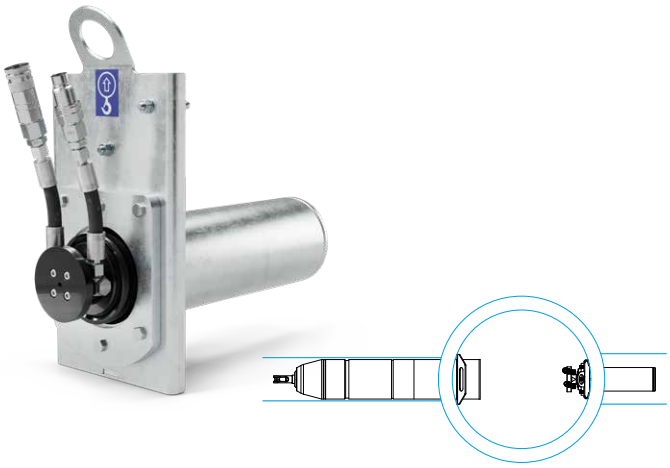
BEFORE

AFTER

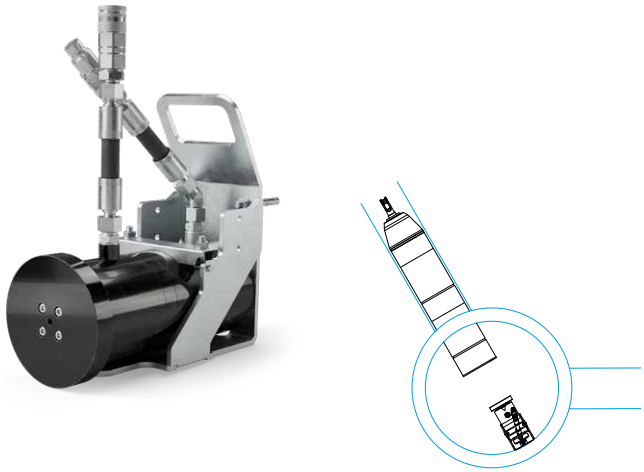
Camera image of a severely deformed sewer pipe before and after renewal using the TIP method. The lateral inlets and property connections are also connected without trenching, using welded sockets made from the same material.

GRUNDOTIP
THREE MODELS TO SUIT THE JOB

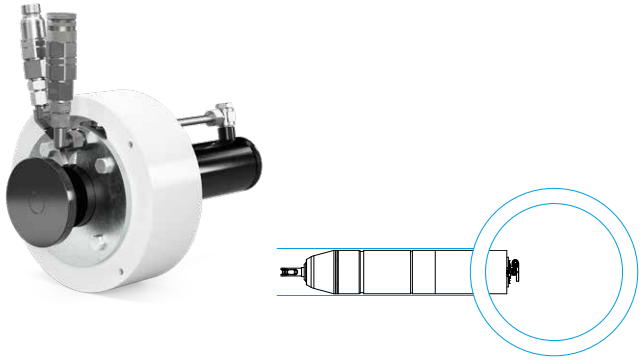
To adapt to different installation scenarios, GRUNDOTIP is available in three versions for pipe renewal ranging from ND 200 to ND 500. The pipe and manhole cylinders are also available in two pressure ratings, ensuring complete calibration regardless of the extent of damage or the diameter of the existing pipe.



GRUNDOTIP
PIPE CYLINDER
The pipe cylinder is the standard version for the TIP method. The cylinder is lowered into the existing pipe and securely mounted to the manhole or pit wall.
- Telescopic and double-acting
- Two designs with 330 kN or 500 kN thrust, each with a 700 mm stroke
- Renewal of old pipes from ND 200 to ND 500
- Installation of new pipes from OD 192 to OD 485



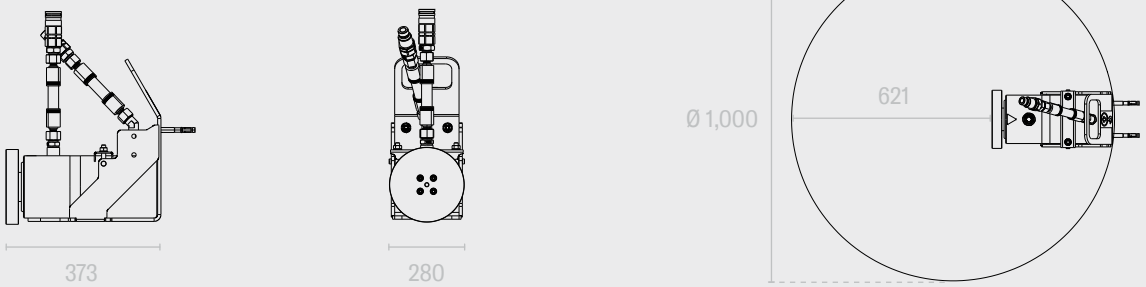
GRUNDOTIP
MANHOLE CYLINDER
The manhole cylinder is used when the old pipe to be replaced runs out of the manhole in only one direction. It is secured to the opposite manhole wall.
- Telescopic and double-acting
- Two designs with 330 kN or 500 kN thrust and a stroke of 264 mm resp. 217 mm
- Renewal of old pipes from ND 200 to ND 500
- Installation of new pipes from OD 192 to OD 485
- Works with spacers



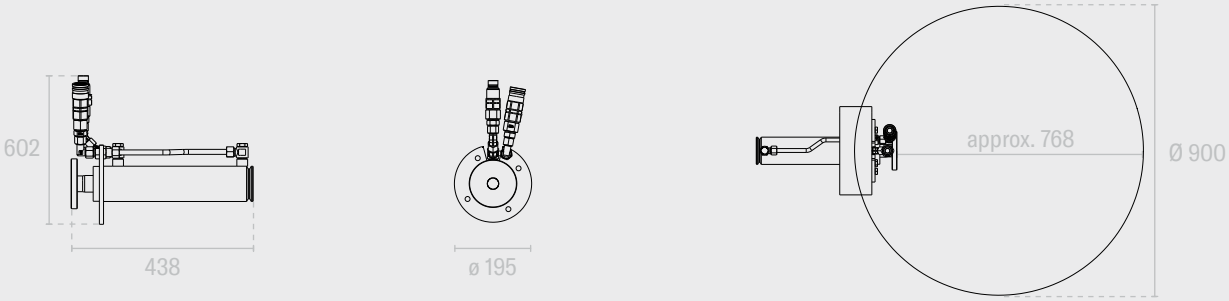
GRUNDOTIP
NEW PIPE CYLINDER (OPTIONAL)
The new pipe cylinder is available for particularly narrow manholes where there is no space for the cylinder to move. It is lowered into the pipe segment to be installed and pushes against the opposite manhole wall.
- Not telescopic, but double-acting
- One design with 100 kN thrust force and 250 mm stroke
- Works with spacers
- Renewal of old pipes from ND 200 to ND 350
- Installation of new pipes from OD 192 to OD 340

GRUNDOTIP PIPE CYLINDER

GRUNDOTIP MANHOLE CYLINDER



GRUNDOTIP NEW PIPE CYLINDER



TECHNICAL DATA	330 PIPE	500 PIPE	330 MANHOLE	500 MANHOLE	100 NEW PIPE
Dimensions (L x B x H)	648 x 280 x 602 mm	648 x 310 x 693 mm	373 x 180 x 398 mm	383 x 211 x 431 mm	438 x 195 x 358 mm
Weight	98 kg	144 kg	52 kg	80 kg	20 kg
Thrust piston 1 (piston 2)	330 kN/159 kN	500 kN/282 kN	330 kN/159 kN	500 kN/282 kN	100 kN
Stroke	700 mm	700 mm	264 mm	217 mm	250 mm
Manhole size	min. Ø 900 mm	min. Ø 900 mm	min. Ø 1,000 mm	min. Ø 1,000 mm	min. Ø 900 mm
Hydraulic operating pressure	250 bar				
Material of old pipe	Stoneware, concrete				
Inner diameter of old pipe *	ND 200 – 350	ND 350 – 500	ND 200 – 350	ND 350 – 500	ND 200 – 350
New pipe diameter *	OD 192 – OD 340	OD 340 – OD 485	OD 192 – OD 340	OD 340 – OD 485	OD 192 – OD 340
New pipe material	PP (short pipe modules)				
Hydraulic power unit	HP7E				

All data is subject to change. *Depending on the type of damage.

TIP METHOD
MORE THAN ONE SOLUTION

The rehabilitation of underground infrastructure is not a future issue; it already represents a significant and largely underserved market with an urgent need in most countries. In the UK, for example, the majority of the approximately 500,000 km sewer network is over a hundred years old. Only 250 km of this is reinstated each year, resulting in an annual shortfall of 2,500 km of pipes measured against the European standard rehabilitation rate of 0.5 %.

Particularly in cases of urgent renovation needs, pipe-in-pipe renewal using GRUNDOTIP provides a fast, safe and durable solution. It creates a new, load-bearing pipe within the existing structure immediately – without long downtimes or uncertainties.

The GRUNDOTIP application range can be extended by using a pipe bursting system (pulling rig): If obstacles in the old pipe cannot be overcome by thrust alone, the pulling force of the bursting system supports or performs the recalibration of the old pipe. The combination of pulling and thrusting forces optimises the distribution of forces, enabling the re-instatement of greater pipe diameters and more complex damage patterns.

The TRACTO PIPE BURSTING CENTER supports civil engineering contractors who want to capitalise on the rapidly growing pipe rehabilitation market by using the TIP method, offering practical training and bespoke project consultancy.

METHOD VARIATIONS

OPTIONS	TYPE OF PIPE	OLD PIPE	LENGTH	POWER	TIME FOR 50 M	OPTION FEATURES
Push-in method	Single pipe	DIN 150 – 500	50 m	up to 400 kN	approx. 2 – 3 hours	Force transmission via manhole wall
Push-in method + pull-in method	Single pipe	DIN 150 – 500	70 m	up to 900 kN	approx. 5 – 6 hours	Distribution of the available forces across both manhole structures

Combination of the GRUNDOTIP's thrust force and the pulling force of a GRUNDOBURST 400S

GRUNDOTIP
A COMPLETE SYSTEM

The GRUNDOTIP system consists of the push-in cylinder, an expander with a guide mandrel serving as a calibration head, a stop plate, pipe adapters, spacers for various lengths and a hydraulic power unit for the drive.

Expander

Stop plate

Guide mandrel

Pipe adapter

Pressure plate

Adapter

Hydraulic power unit HP7E
The HP7E electrically driven power unit is specially designed to supply hydraulic power to the GRUNDOTIP push-in cylinders. A digital display enables continuous monitoring of thrust and pressure forces. The cylinders can be pushed forward or retracted using a wired or wireless remote control.

- Weight: approx. 500 kg
- Dimensions: 1,200 x 800 x 1,650 mm
- Operating pressure: 250 bar
- Oil/tank capacity: 100 litres
- Electric motor: 7.5 kW, 400 V/50 Hz, IE3
- Power connection: 400 V, 16 A, CEE plug

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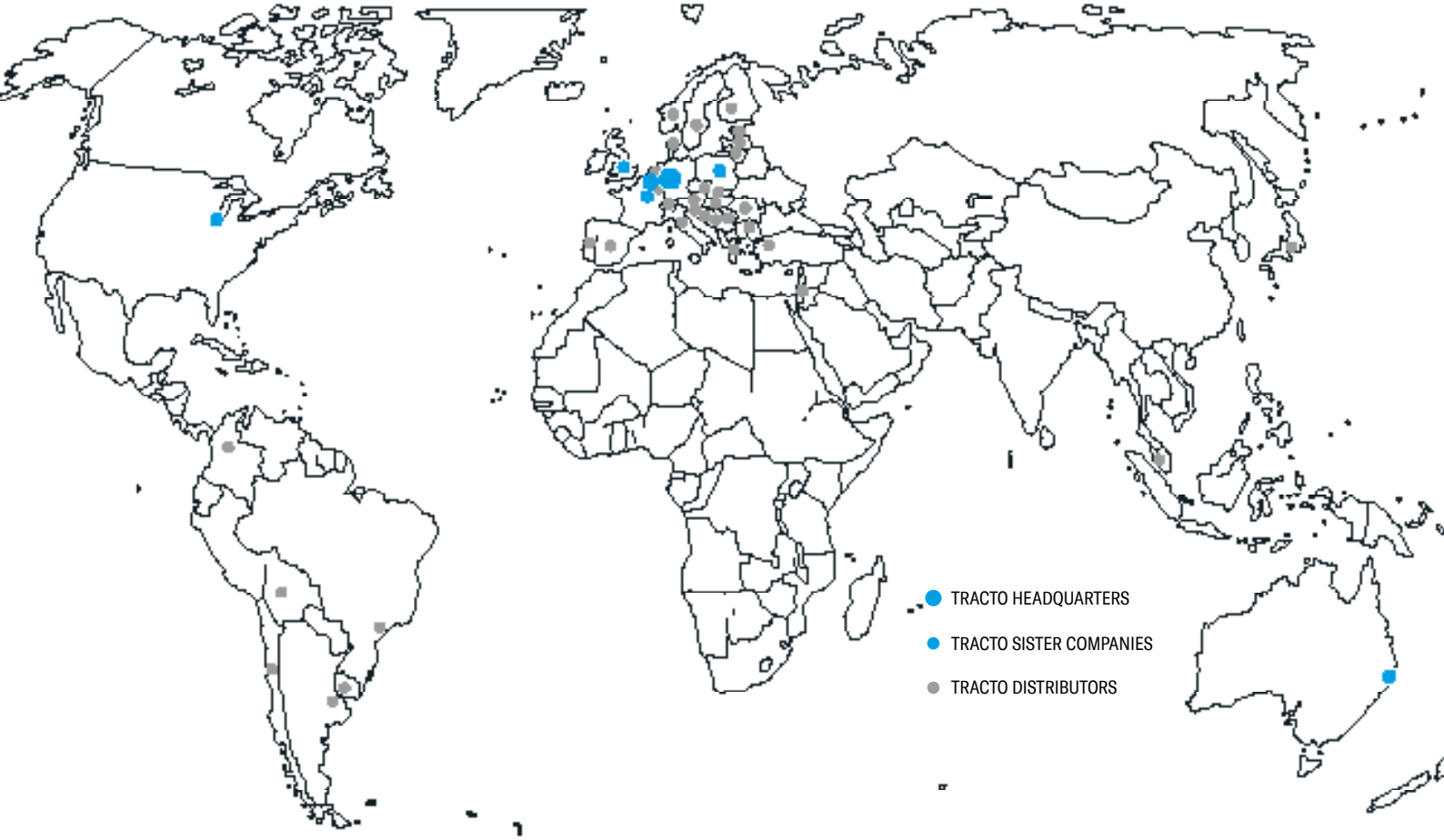

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TIP1OENV01 04/2026