

Herrenknecht

A world leader in groundbreaking tunnelling technology

Herrenknecht is a professionally positioned and internationally oriented family enterprise. As the only company worldwide, Herrenknecht delivers cutting-edge tunnel boring machines for all ground conditions and in all diameters – ranging from 0.10 to 19 meters. Under the umbrella of the Herrenknecht Group, a team of innovative specialists has formed to provide integrated solutions around mechanized tunnel construction with project-specific additional equipment and services. Pioneering technology by Herrenknecht is always involved when paving the way for the future underground – whether for tunnelling, mining or exploration. Herrenknecht ensures safe and fast progress when constructing modern infrastructures in all areas of application. Exactly where they are needed.



Headquarters in Germany, active worldwide. With more than 4,100 project references, we are a market leader all around the globe.



PIPE THRUSTER

MOBILE PUSH AND PULL FORCE FOR PIPELINE CONSTRUCTION



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**PIONEERING
UNDERGROUND
TECHNOLOGIES**



Herrenknecht Pipe Thruster

Powerful tool for various fields of application

The Herrenknecht Pipe Thruster with its thrust and pulling forces of up to 750 tonnes plays a key role in the trenchless installation of pipelines. This powerful equipment offers greater flexibility and increases the versatility of the HDD method towards even longer pipelines with large diameters and under difficult geological conditions. The Pipe Thruster can recover stuck or defective pipelines by clamping the pipeline and pulling it out of the ground. When using the Direct Pipe® or Pipe Express® method, the Pipe Thruster is always part of the system equipment. The Pipe Thruster is installed at the pipe side (see picture below) and supports the HDD rig during

pipeline installation. Additionally, it pushes the pipeline towards the rig side. Thus, the forces acting on the pipeline are applied more efficiently. The application range of the Herrenknecht Pipe Thruster is extremely flexible. The usable pipeline diameter can be varied from 8 to 60 inches, simply by changing the clamping plates. Other applications include the introduction of pipelines into existing tunnels or Sea Outfall projects, where gas pipelines, pipes for wastewater or desalination plants are pushed from land towards the sea using the Herrenknecht Pipe Thruster. This makes cost- and time consuming offshore drilling facilities unnecessary.



PRODUCT HIGHLIGHTS

Max. thrust and pulling forces of up to 750 t (7,500 kN).

Reserve force for the pipeline installation in HDD projects.

Central technology component for the Direct Pipe® and the Pipe Express® method.

Pipeline insertion into existing tunnels, pipes or boreholes.

Recovery of stuck or damaged pipelines.

The Herrenknecht Pipe Thruster at a project in Oudega, Netherlands.

Gentle to coating and pipe – tested and proven.

A safe and trusted method is required when thrusting the pipeline, as the pipeline coating must not be damaged. Two axially arranged hydraulic cylinders of the Pipe Thruster exert their variably adjustable force on the product pipe via a clamping unit. The hydraulically opening and closing clamping plates of the clamping unit which are lined with hot-vulcanized rubber have a sufficiently large contact surface to the pipe. In this way, they maintain the contact pressure and the shear stress applied on the pipe remains low. In cooperation with various gas suppliers and construction companies, Herrenknecht has demonstrated on many occasions, that no damage is caused to the coating. Pipes coated with Polyethylene (PE), Polypropylene (PP), Glasfibre Reinforced Plastic (GRP on PE) and Fusion Bonded Epoxy (FBE) and concrete were tested.

Together with the former German gas supplier Open Grid it was shown, that under full impact of push force neither the PE-Coating nor the GRP-Coating was damaged by the clamping unit. No compensation of the wall thickness or debonding was observed. The PP-Coating was tested together with the Dutch gas supplier Nederlandse Gasunie. Further tests have been conducted with Chevron, TransCanada and SAIPEM.



A close-up view of the clamping plates.

Since 2006 more than 20 Pipe Thrusters are in operation all over the world. In addition to the factory tests, more than 100 successful projects have proven that the pipeline as well as its coating is not damaged during operations.



TECHNICAL DATA

Machine:	HK300PT	HK500PT	HK750PT
› Max. push/pull force:	3,000 kN / 300 t	5,000 kN / 500 t	7,500 kN / 750 t
› Max. clamping diameter:	914 mm / 36"	1,219 mm / 48"	1,524 mm / 60"
› Stroke of hydraulic cylinder:	4 m / 13 ft	5 m / 16.4 ft	5 m / 16.4 ft
› Weight:	37 t / 81,600 lbs	45 t / 99,200 lbs	85 t / 187,600 lbs
› Shearing angle:	0°-15°	0°-15°	0°-15°