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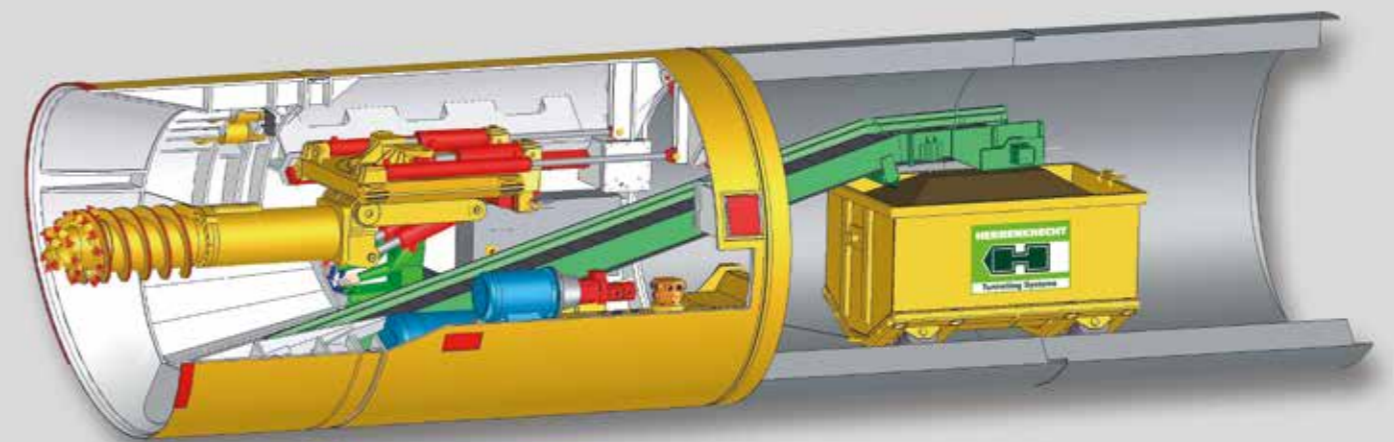
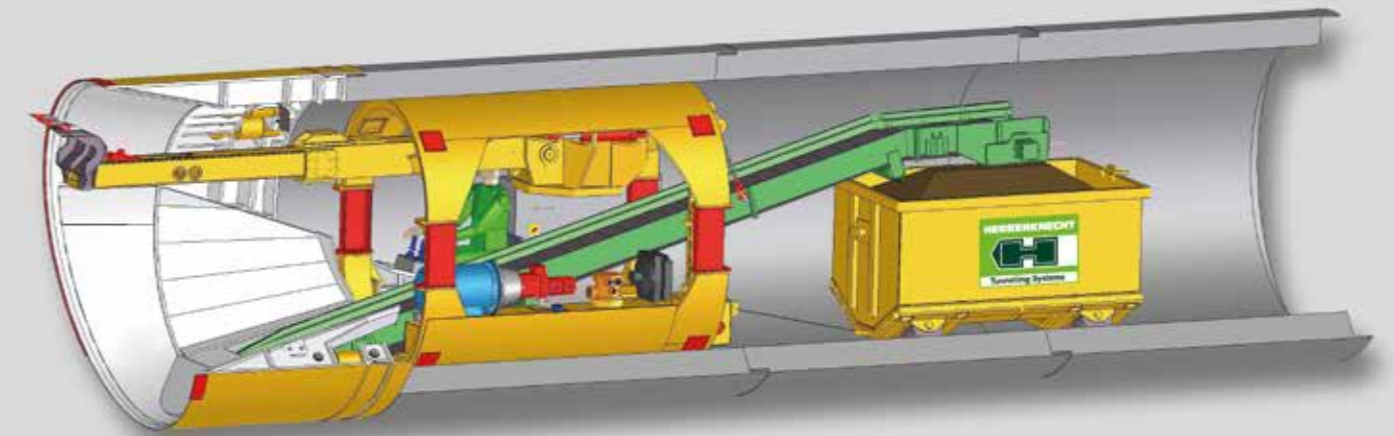
Herrenknecht is the technology and market leader in the field of mechanized tunnelling. Herrenknecht is the only company worldwide to deliver high-tech tunnel boring machines for all ground conditions and all diameters – ranging from 0.10 to 19 meters. Herrenknecht also develops solutions for vertical and inclined shafts.

Around the globe our tailor-made machines create tunnel systems for water and wastewater, gas, oil, electricity and telephone cables (Utility Tunnelling), as well as high-performance infrastructure systems for road, metro and railway traffic (Traffic Tunnelling). Herrenknecht tunnel boring machines successfully achieved final breakthrough beneath the Gotthard mountain range (Switzerland), after excavating more than 85 kilometers of the world's longest railway tunnel. They are forging ahead with large diameter road tunnels and the largest metro lines. Our machines help to cross under water with supreme accuracy and to lay pipelines throughout continents.

The Herrenknecht Group employs around 5,000 people worldwide. With 80 domestic and overseas subsidiaries and associated companies working in related fields the group profits from a team of innovative specialists, providing integrated solutions with project-specific equipment and service packages – dedicated to the project and the customer.

### Herrenknecht AG

D-77963 Schwanau  
Phone +49 (7824) 302 0  
Fax +49 (7824) 302 3640  
utility@herrenknecht.com  
www.herrenknecht.com



## HERRENKNECHT OPEN FACE MACHINES: SAFE AND ECONOMIC TUNNELLING IN DRY GROUND CONDITIONS.

- For economic tunnelling in dry soil
- Excavation tools adaptable to ground conditions
- Excavator bucket for soft and mixed ground or compact soil
- Roadheader for soft rock
- Simple muck transport via belt conveyor and muck skips





Machine ready for delivery.



Preparing to launch.



Front view of tunnelface during excavation.



Pushing steel pipes.



Skip ready to be pulled up.



Breakthrough of MHSM2 Roadheader.

## FLEXIBLE AND SIMPLE MACHINE TECHNOLOGY.

Shields with open face excavation produce excellent tunnelling performances in a wide variety of geological conditions and in varying diameters of tunnels. They are directly controllable by the operator, easy to handle and extremely versatile in use – at attractive investment conditions. Furthermore, MH and MHSM machines can be easily installed even in the smallest spaces and allow for very economical tunnelling.

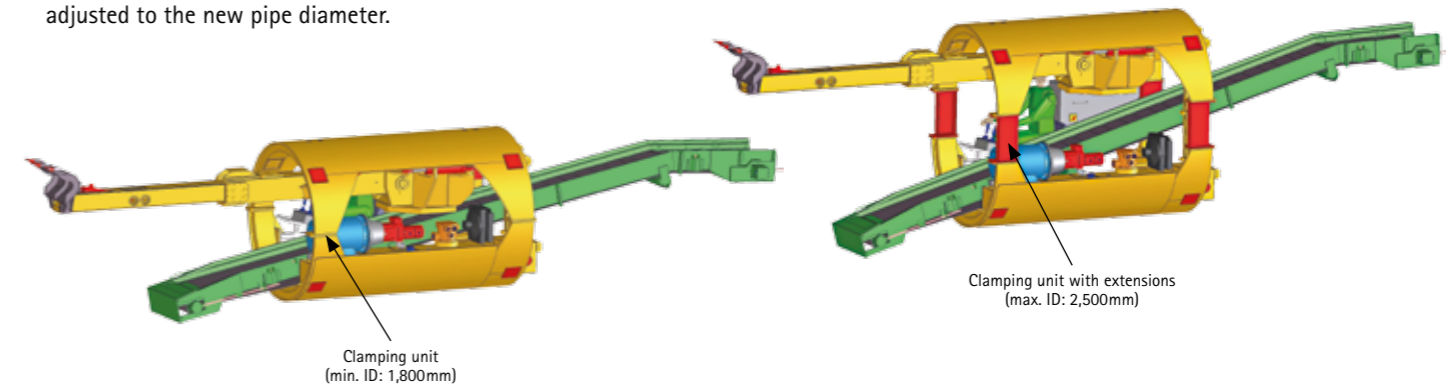
Excavation components can be changed quickly, which demonstrates the outstanding flexibility of the open face excavation machines. Both the excavator and the roadheader can be fitted to the same basic machine. Depending on the ground conditions, diameter and tunnelling length, the tunnel section can be advanced either by pipe jacking or by installing segments.

### SPECIFICATIONS

	MH (CLAMPING UNIT)	MHSM (INTERCHANGEABLE)
Max. drive length	400m	400m – 600m
Diameter range	ID 1,800mm – ID 2,500mm	ID 1,800mm – ID 3,500mm
Powerpack(s)	Kinematics 22kW – 30kW	Kinematics 30kW – 45kW / Roadheader 90kW – 160kW

## MH: FOR MIXED GEOLOGIES.

**Clamping unit concept** (Röhrnrad) designed for soft and mixed soil. This concept provides the best opportunity for pushing different pipe diameters with one core unit. The forward shield structure is manufactured to suit an individual pipe size and can be replaced easily, while the centerpiece – the excavator inside the clamping unit – is adjusted to the new pipe diameter.



## MHSM: FOR MIXED GEOLOGIES AND SOFT ROCK.

**Interchangeable concept** designed for soft and mixed geologies as well as soft rock up to 80MPa depending on the rock structure. This concept provides the possibility to use different tools for variable ground conditions (excavator or roadheader) within one tunnelling machine package.

Further advantages are easy and fast maintenance as well as quick set-up and machine launch. Facilitated equipment handling ensures efficiency and in-budget operation.

### TECHNICAL DATA

TYPE	TOOL	MOUNTING	STROKE [mm]	NOMINAL PIPE ID [mm]
MH3	Excavator	fixed	1,300	1,800
MH3	Excavator	clamping unit	1,300	1,800
MH2	Excavator	fixed	1,500	1,800 – 2,500
MH2	Excavator	clamping unit	1,500	1,800 – 2,500
MHSM2	Excavator	travel slide	800	1,800
MHSM2	Excavator	travel slide	1,500	2,000 – 2,500
MHSM2	Roadheader	travel slide	–	1,800 – 2,500
MHSM1	Excavator	travel slide	1,000	2,200 – 2,800
MHSM1	Excavator	travel slide	1,500	3,000 – 3,800
MHSM1	Roadheader	travel slide	–	2,200 – 3,800

