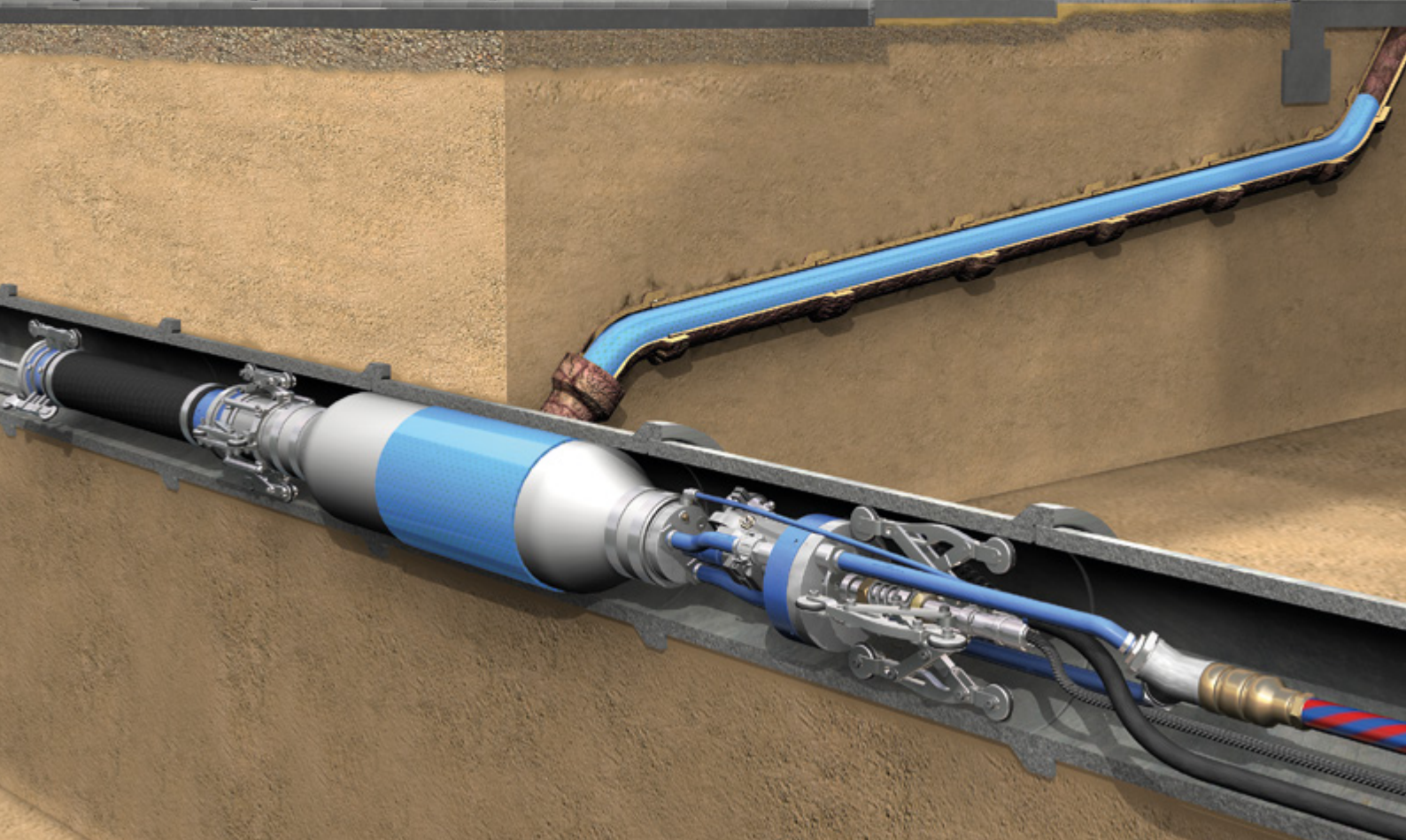


Lateral Connection Rehabilitation

WITH THE MAIN-TO-HOUSE SEWER LINING METHOD



Trelleborg Mth System



Introducing Trelleborg Seals & Profiles

Part of the wider Trelleborg Industrial Solutions Business Area of Trelleborg Group, Trelleborg Seals & Profiles is a world leader in new seals and rehabilitation sealing solutions for concrete and plastic pipes, manholes, and connectors used for water supply, sewerage and drainage. Drawing on advanced polymer technology, the high performance of our seals ensures the fulfilment of the highest possible reliability standards.

With a global reach and a track record spanning more than half a century, we deliver continuous innovation to customers across the globe with a logistics and sales network spanning Asia Pacific, Europe, Middle East, Africa, North America and South America. Drawing on our engineering expertise and advanced technological solutions, we will see your project through from the beginning to the end.

Whether you need an entirely new system or if your existing one needs rehabilitation, we offer a range of market-leading seals that promise:

High quality

Quick and easy installation

Improved productivity

Zero leakage

Trelleborg offers the highest reliability and performance standards, providing watertight solutions that protect not only your pipe cycle, but your reputation too.

Trelleborg MtH What it's used for

Trelleborg Seals & Profiles is among the leading specialist companies offering innovative technologies for the maintenance of sewer systems.



Trelleborg has more than 25 years of experience, in continuous research and further development into the modern trenchless repair of pipelines in sewer systems, buildings, and industrial facilities.

Part of these systems is the Trelleborg MtH system, which is a trenchless rehabilitation method (no-dig technology) that is able to repair and seal both lateral connections and lateral pipes at the same time.

What's unique about this system is its ability to do this from the main pipe. There is no need for permission to enter private premises or for excavations outside the building.

The system also uses the specially developed Trelleborg MtH Liner which consists of a pipe liner, matched to the diameter and length of the lateral pipe to be rehabilitated, and two flaps at the end, so that multiple main pipe diameters can be rehabilitated.

Made out of synthetic fiber, this flexible liner is non-corroding and is designed to work with Trelleborg Epoxy HC120/HC120+. These resin systems promise an ample pot time, short cure times, and excellent mechanical properties.

The impregnated Trelleborg MtH Liner is then introduced into the main pipe and positioned – with the help of the Trelleborg MtH Packer – at the lateral connection.

Next, the packer is inflated using air pressure. This process inverts the MtH Liner into the lateral connection pipe and presses its resin-impregnated side against the pipe wall. The liner is now ready to be cured with steam.

Once fully cured, the fiber/resin compound will form a tight and frictional fit with the host pipe wall. This cured-in-place pipe (CIPP) is thus integrated with the host pipe and fully meets structural and hydraulic requirements. The nominal diameter of the pipe is reduced by a slight extent only.

A final CCTV inspection is then performed to review and document the result of the rehabilitation process. A final leakage test is performed according to the EN 1610 or similar international standards.

WIDE RANGE OF PIPE CONFIGURATIONS

- Lateral pipe diameters:
DN 100 – DN 250 [4" – 10"]
- Connection angle:
30° – 90°
- Main pipe diameters:
DN 135 – DN 200 [5,3" – 8"] Packer S
DN 200 – DN 225 [8" – 9"] Packer M
DN 250 – DN 350 [10" – 14"] Packer L
DN 400 – DN 600 [16" – 24"] Packer XL

Benefits at a glance

CLEAN TECHNOLOGY

Our trenchless technology is eco friendly. No volatile organic compounds (VOCs) or chemicals such as styrene are released during installation. No environmental or health issues.

HASSLE-FREE INSTALLATIONS

This system allows the rehabilitation of lateral pipes and lateral connections from the direction of the main pipe. This eliminates the need to excavate or seek permission to enter private property where access holes, etc. are located.

WIDE APPLICATION RANGE

Lateral connections up to 150 m [492 ft] from the access point and lateral connection pipe lengths of up to 30 m [98 ft] can be rehabilitated.

GOOD VALUE FOR MONEY

Short steam-curing time means that an experienced team, with proper preparation, can complete up to three connections per pipe section per working day.

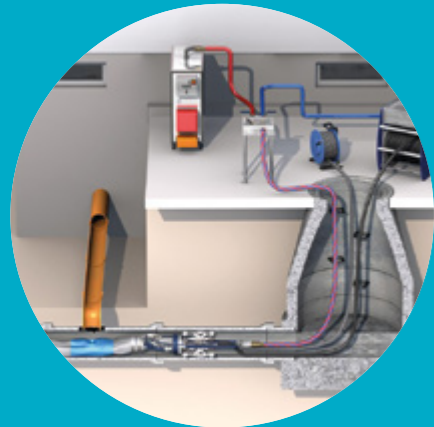
USER-FRIENDLY SYSTEM

The compatibility between the Trelleborg Epoxy resins and the Trelleborg MtH Liner allows for fast and easy impregnation. The ample pot time of the resin reduces time pressure for the crew, increases work security, and leads to better product quality. The bendable packers are easy to insert from the manhole to the main pipe.

EXCELLENT QUALITY AND SUSTAINABILITY

The used resin system, coupled with MtH Liner material, ensures no shrinkage and promises excellent mechanical properties.

Trelleborg Mth Functional principle*



1 POSITIONING THE TRELLEBORG MTH PACKER

The Trelleborg Mth system allows lateral connections with angles from 30° to 90° to be repaired. The packer is first pulled slightly beyond the point of repair and rotated with the help of the control unit and a remotely operated camera until the packer basket is aligned with the lateral connection.



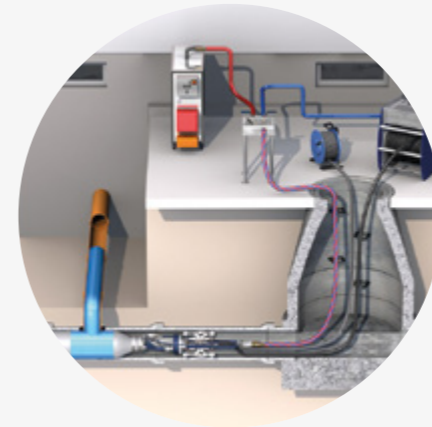
2 LIFTING THE MTH PACKER BASKET

The packer basket then needs to be lifted until it touches the pipe wall. This can be done by switching the operating lever of the Trelleborg Mth Control Unit to its “up” position.



3 BRINGING THE TRELLEBORG MTH PACKER INTO ITS FINAL POSITION

The packer is then gently pulled back until the packer basket locks into place in the lateral connection pipe. This locking into place can be verified remotely using the camera and manually using the push rods. The system operator also needs to ensure that the packer basket is now centered in the lateral pipe.



4 “INVERSION” OF THE TRELLEBORG MTH LINER INTO THE LATERAL CONNECTION PIPE

The Trelleborg Mth Bladder is then filled with compressed air until the flaps of the Trelleborg Mth Liner are pressed against the main pipe. The system operator can then start inverting the liner. Once the liner is fully inverted and pressed firmly against the pipe wall, the curing process starts.

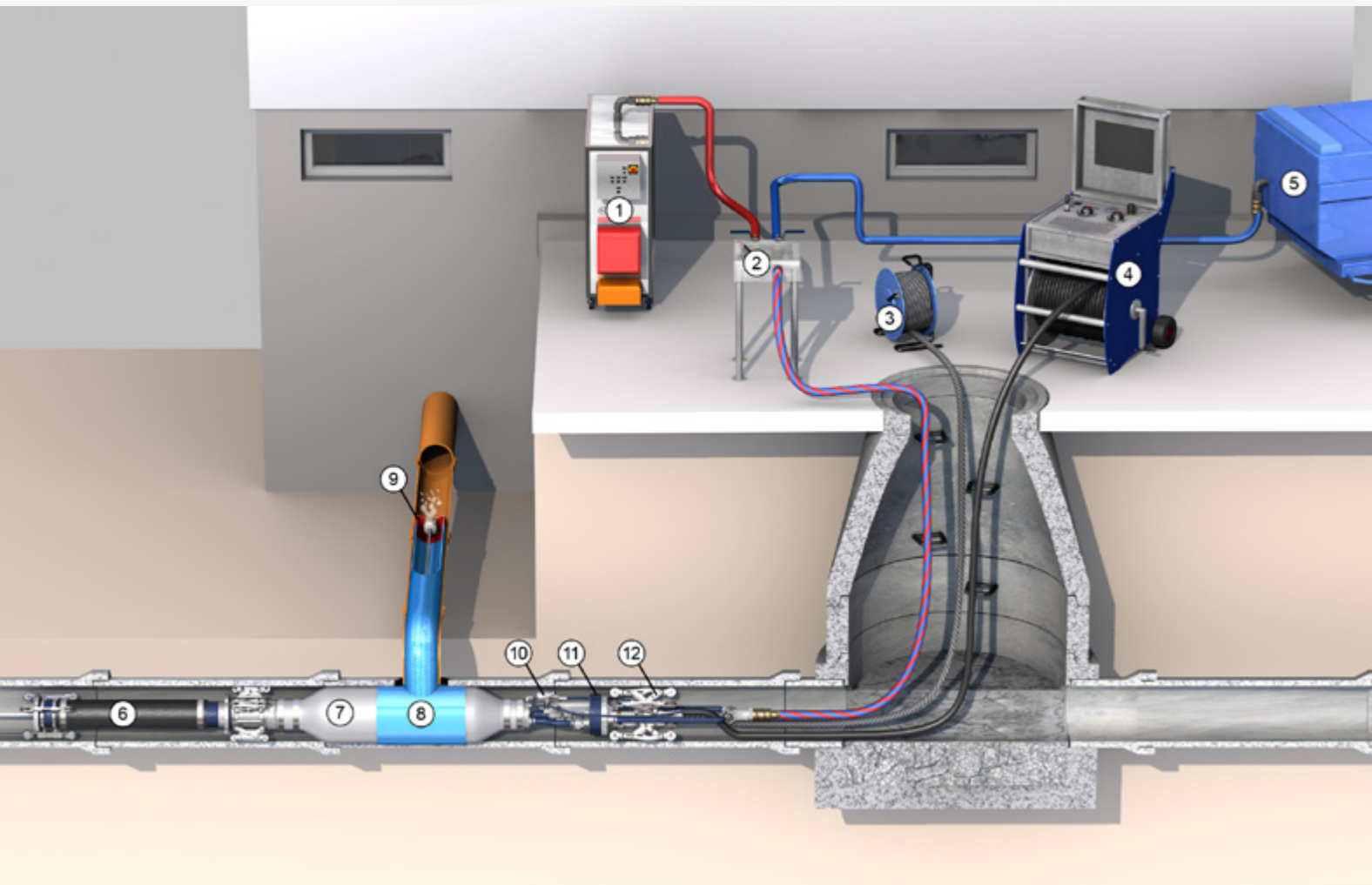


5 REMOVING THE MTH PACKER

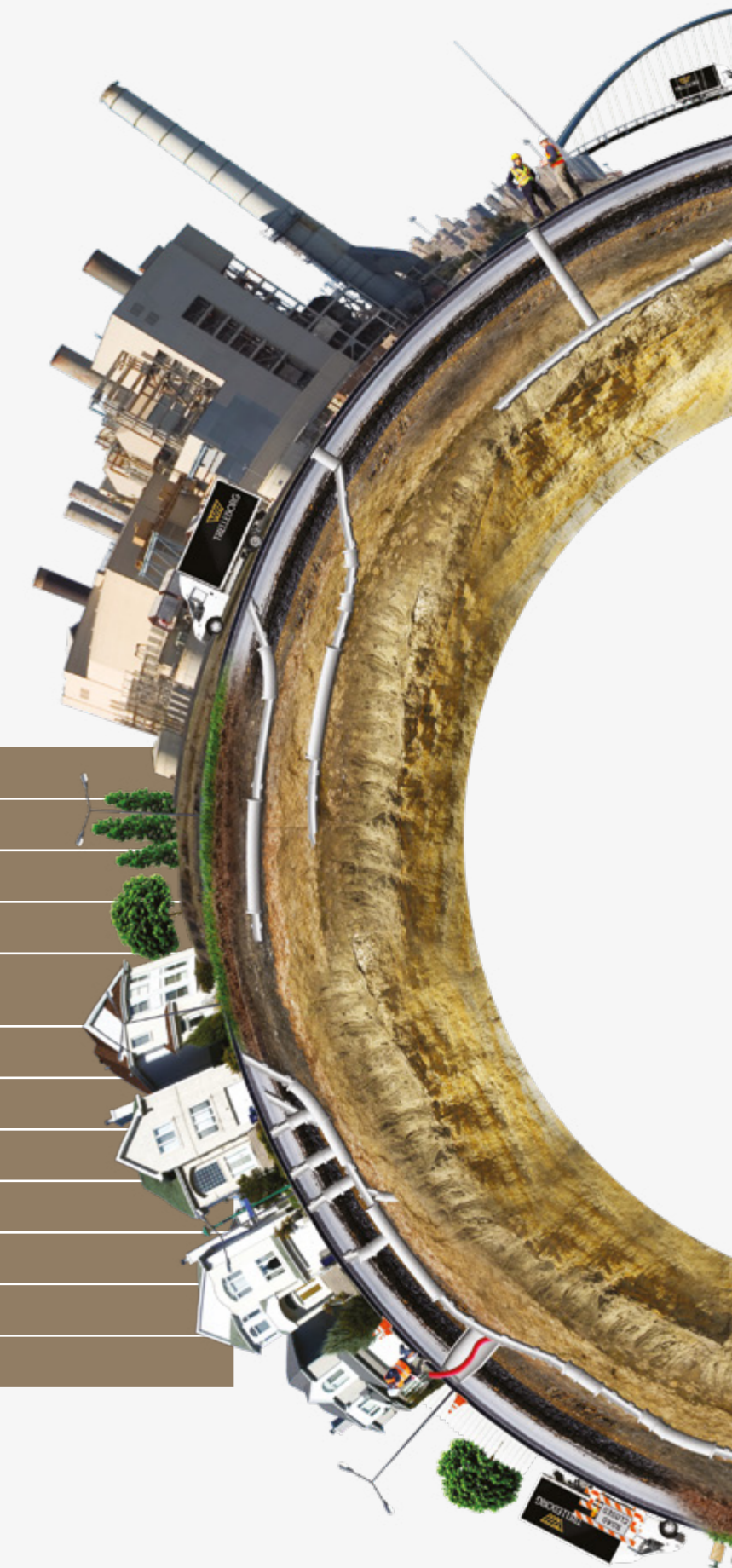
At the end of the curing process, the LinerEndCap has to be pulled out using the liner control rope. A vacuum should be applied to deflate the calibration hose. After it is fully deflated, the packer can be removed from the pipe.

* This is merely an introduction to the system. Full details on the method and correct application of the Trelleborg Mth system are available in our method statement and technical data sheets.

Trelleborg Mth Technical components



- | | |
|----|---|
| 1 | Steam Generator |
| 2 | Steam mixing table |
| 3 | Towing rope |
| 4 | Trelleborg Mth Control Unit |
| 5 | Compressor – recommended capacity:
3000 l/min, 8 bar, [792 gpm, 116 psi] |
| 6 | Trelleborg Mth Inversion Hose |
| 7 | Trelleborg Mth Packer |
| 8 | Trelleborg Mth Liner |
| 9 | LinerEndCap with Mth Steam Outlet |
| 10 | Mth Camera |
| 11 | Mth Steam Swivel Unit |
| 12 | Mth Wheel Set |



Trelleborg Mth Basic equipment



The Trelleborg Mth Packer

PICTURE CAPTION	
1	Inversion hose end element with wheel set
2	Inversion hose, max. length: 30 m [approx. 98 ft]
3	Mth set bow and sealing (for inversion hose)
4	Wheel Set (inversion side)
5	Bladder
6	Camera on camera bracket
7	Rotary Drive
8	Steam Nozzle swivel
9	Wheel Set (swivel side)
10	Connection for steam hose 1"

PACKER TYPES
DN 135 – DN 200 [5.3" – 8"] Packer S – Base
DN 200 – DN 225 [8" – 9"] Packer M – Base
DN 250 – DN 350 [10" – 14"] Packer L – Base
DN 400 – DN 600 [16" – 24"] Packer XL- Base
LATERAL PIPE DIAMETERS For all packer types: DN 100 – DN 250 [4" – 8"]
CONNECTION ANGLE: 30° – 90°

TRELLEBORG MTH CONTROL UNIT

The Mth Control Unit supports the handling of the compressed air and the vacuum for the packer, the motor, and the camera. The unit comes with a high-quality monitor and a keyboard for data input as well as video output.

English is the default language for the control unit keyboard and OS. Other languages are available upon request.

Mth Hose Reel with Camera

- Combined air/electricity/video-hose package, 150 m [approx. 492 ft]
- Rotary feedthrough
- Multi-function plug for packer connection
- Colour Camera
 - PAL format
 - LED lights
 - Sapphire crystal lens
 - Fill and release valve for nitrogen

Components are also available separately upon request. Please refer to our spare parts catalogue.






Hose package with camera

Trelleborg Packer Conversion articles

CONVERSION ARTICLES	
<p>MtH Repair Set for calibration hoses</p> <ul style="list-style-type: none"> • Super glue • Silicone glue • All-purpose cleaner (bottle) • Silicone patches, 190 x 280 mm [7½" x 11"] • Cleaning rag, 380 x 380 mm [15" x 15"] 	
<p>Trelleborg MtH Bladder (for all packers)</p> <ul style="list-style-type: none"> • Connection angle: 30° - 90° • Lateral pipe diameters: DN 100 - DN 250 [4" - 8"] • Main pipe diameters: <ul style="list-style-type: none"> DN 135 - DN 200 [5,3" - 8"] Packer S DN 200 - DN 225 [8" - 9"] Packer M DN 250 - DN 350 [10" - 14"] Packer L DN 400 - DN 600 [16" - 24"] Packer XL 	
<p>MtH Packer Basket</p> <p>Comes in two versions:</p> <ul style="list-style-type: none"> • Type S (Standard) for unrehabilitated main pipes • Type H (Half-height) for previously rehabilitated main pipes with a reduced diameter 	

Packer conversion and repair tool boxes

BASIC TOOLBOX	For details and article numbers, please refer to system catalogue
<p>Basic equipment for rehabilitation. Can be used with the following systems in combination with the corresponding supplementary kit:</p> <ul style="list-style-type: none"> • Trelleborg MtH • Trelleborg LCR-S • Trelleborg LCR-B <p>* For details and article numbers, please contact our customer sales support team.</p>	
MTH SUPPLEMENTARY KIT FOR THE BASIC TOOLBOX	
<p>Contains MtH specific small spare parts such as couplings, screws, seals, air hoses and a combination wrench set.</p>	
 <p>It's now even easier! All you need is one basic toolbox and one packer conversion tool box for all three systems – Trelleborg LCR-S, Trelleborg LCR-B and Trelleborg MtH – plus the corresponding supplementary kit(s) to have everything you might need on the work site!</p>	
PACKER CONVERSION TOOL BOX	
<ul style="list-style-type: none"> • Basic equipment for packer conversion • Compatible with the Trelleborg LCR-S, Trelleborg LCR-B and Trelleborg MtH systems • To be used in combination with the corresponding supplementary kit 	
MTH SUPPLEMENTARY KIT FOR PACKER CONVERSION	
<p>Contains the required spare parts for MtH Packer conversion.</p>	

Trelleborg Mth Liner & Calibration hose

TRELLEBORG LINER & CALIBRATION HOSE

Trelleborg Mth Basic Liner

- Material and finishing:
polyester needle fleece with an extremely flexible PP-coating;
stitched-seam for high burst pressure
- Multidimensional:
features two flaps at the end so that multiple main pipe diameters
can be rehabilitated
- Suitable for steam curing
- Designed for use with LinerEndCap
- For main pipes:
DN 100 - DN 600 [4" - 24"]
- For lateral pipes:
DN 100 - DN 200 [4" - 8"]
from 1 m to 30 m [3¼ - 98½ ft]
- Lateral connection angle:
45° or 90° (application range: 30° to 90°)



Calibration Hose Heavy Duty (orange)

- Suitable for LinerEndCap
- Delivery length: 10 m
- Available diameters:
DN 100/DN 125/DN 150/DN 200 [4"/5"/6"/8"]



Liner
EndCap

Supplements for steam curing

STEAM CURING

SteamGen Type M150

- Completely automatic steam generator with steam output of 150 kg/h
- Oil-operated
- Comes on wheels (self-blocking)
- Heat-up time of approx. 10 min.



Trelleborg Steam Mixing Table

For manual control of air/steam mixture.



Mth Steam hose Trelvast 1"

80 m [262½ ft] , with reel.



Additional Equipment (Recommended)

- Compressor
- Mth packer stand support
- Double Paddle Mixer
- Scissors
- Teflon roller
- Silicon oil
- Protective Foil
- Binding wire

Appropriate Resin system

It's now even easier!

Use the **Trelleborg SiteGuide App**, which features a resin calculator and downloads for quality management on the building site.



Site
Guide



RESIN

Trelleborg Epoxy HC120/HC120+

- Pot life: 120 min, 25 °C [77 °F]
- Cure time: 45 min, 80 °C Steam [176 °F]

For more technical details, please refer to our technical data sheets.
For bulk shipping sizes, article numbers, and prices, please refer to our price catalogue.

APPROVAL



Trelleborg Seals & Profiles around the world

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FURTHER INFORMATION

www.trelleborg.com/pipe-seals

Video www.youtube.com/c/trelleborgpipeseals

Case Studies

MtH System Catalogue

Technical Data Sheets

Method statement (handed over with training course)



Trelleborg is a world leader in engineered polymer solutions that seal, damp and protect critical applications in demanding environments. Its innovative solutions accelerate performance for customers in a sustainable way. The Trelleborg Group has annual sales of about SEK 34 billion (EUR 3.32 billion, USD 3.92 billion) and operations in about 50 countries. The Group comprises three business areas: Trelleborg Industrial Solutions, Trelleborg Sealing Solutions and Trelleborg Wheel Systems, and a reporting segment, Businesses under development. The Trelleborg share has been listed on the Stock Exchange since 1964 and is listed on Nasdaq Stockholm, Large Cap.

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