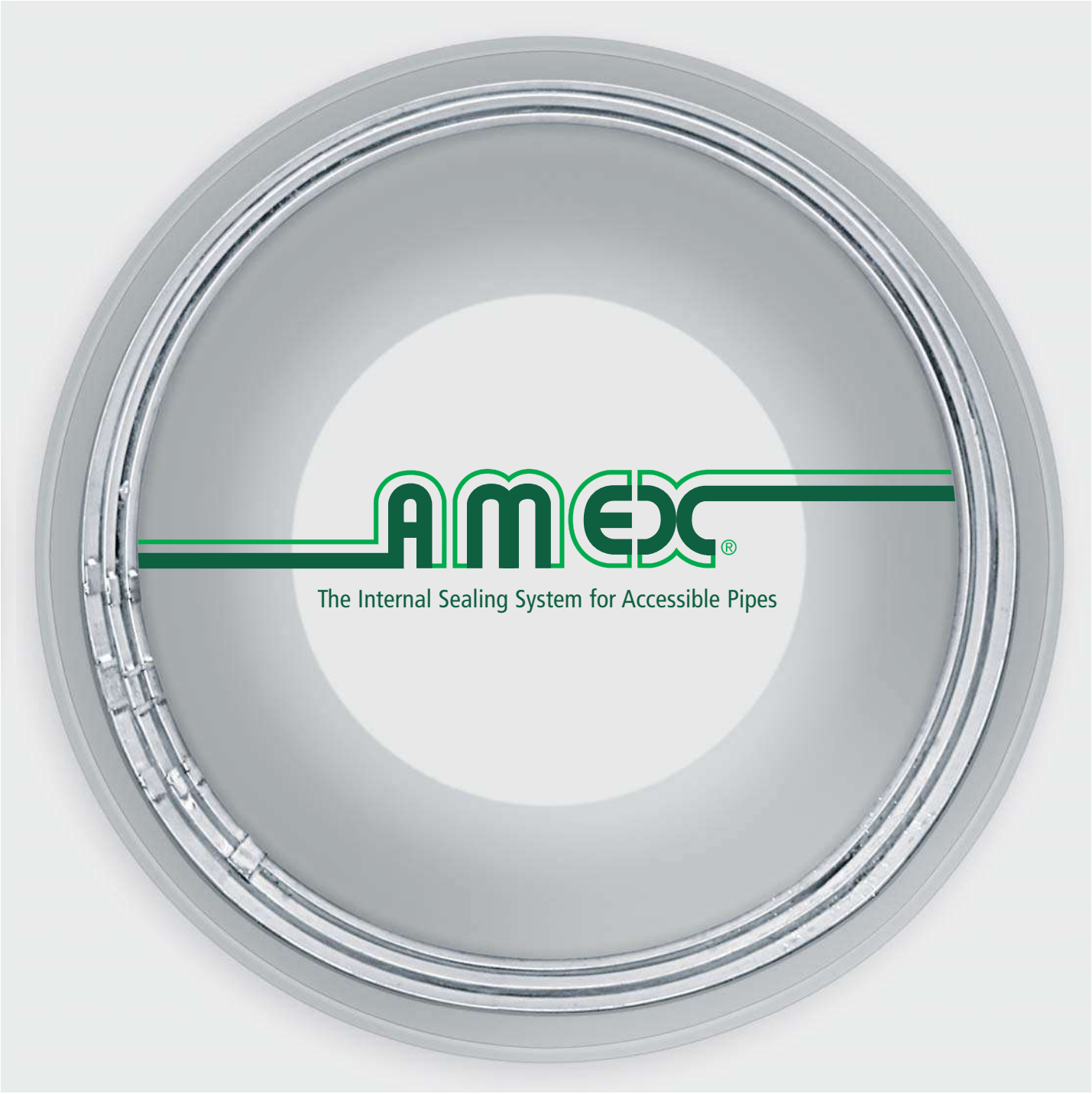

AMEX®
The Internal Sealing System for Accessible Pipes


ISO DIN 9001 certified
AMEX
The Internal Sealing System
for Accessible Pipes
www.amex-10.de

# Origin of the AMEX®-10 Internal Sealing System for Accessible Pipes – Supply and installation of over 1.3 Mio System units world wide

As long as mankind started to build pipe systems, as long there have been leaks. These leaks are caused by defective joints or disturbances in the pipe wall. These leaks are caused by environmental influences like landslides, earthquakes, ground-water level, aggressive liquids and, a major factor, by heavy above ground traffic load.

Approximately 60 years ago the first tests have been made with rubber profiles to mechanically seal leaking joints from the inside.

Beginning of the seventies the AMEX®–10 Seal was introduced to the market –designed for the various requirements to seal a pipe system – and since then continually adjusted and further developed to meet the latest requirements.

At that time they where used to seal joints made of cast iron in the water- and gas industry. Nowadays the AMEX®–10 MONO Seal is applied to pipe materials like prestressed concrete, concrete made in place, steel, PVC, PE, AC, GLP, cement mortar lined pipes or as end seals for liners.

In all areas of the general industry, supply- and disposal industry and power station industry the AMEX®–10 Internal Sealing System has proved its permanent reliability since over 30 years.

## Effectiveness of the AMEX®-10 Internal Sealing System

The applied AMEX®–10 profiles are produced in an endless version and are joint together to any required size by a special production method.

The outstanding physical characteristics and resistance together with the special shape of the AMEX®–10 profiles with its three fold seal between the main seal, ensure a permanent seal in the pipe.

The special elastic quality of various rubber types with the ability to bridge axial and radial displacements without influencing the sealing properties is the basis for a permanent sealing function.

The sealing function of the AMEX®–10 Internal Sealing System is exclusively reached by radial tension via the retaining bands, which are manually installed without the use of a roboter or adhesives.

The AMEX®–10 Mono Seal is not just a seal for rehabilitation but has the quality and feature of a pipe seal for new pipe systems.

MEYER & JOHN
TIEF- UND ROHRLEITUNGSBAU


President
Dr. Hans-Jürgen John

MEYER & JOHN 50 years 1956 - 2006

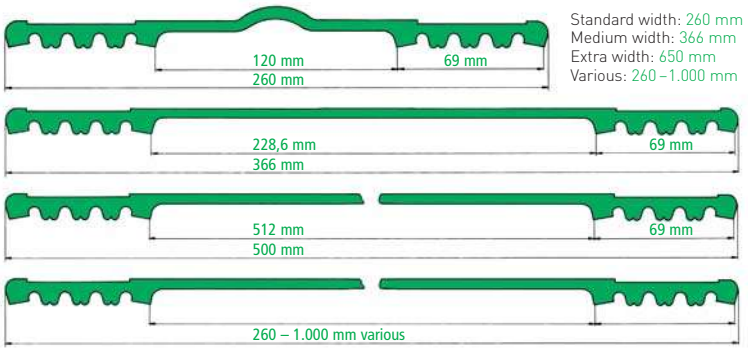
## Use of common resources

AMEX GmbH is a company of the MEYER & JOHN Group. All resources of the group like R&D center, design office, yard and workshops on one hand and the 50 years contracting experience in the gas, water and sewer industry on the other hand are at the disposal of the AMEX team.

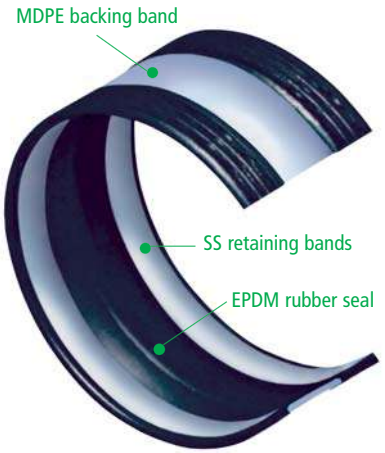
## Area of application of the AMEX®-10 MONO Seal

### Man accessible pipes
The AMEX®-10 MONO Seal is suitable to seal pipe joints and leaks in diameters from 500/600 to 5.800 mm and larger as well as containers made of steel, cast iron, reinforced concrete, concrete made in place, PVC, AC, GLP and PE.

### Non – accessible pipes
In the diameters 250 – 500 mm the AMEX®-10 MONO Seal is used to seal joint connections at branches in accessible pipes or as an end seal for liners.




Standard width: 260 mm
Medium width: 366 mm
Extra width: 650 mm
Various: 260 – 1.000 mm




### Pressure rating
In general the AMEX®-10 MONO Seal is designed for an internal pressure rating of 20 bar.

If higher pressure is involved the AMEX®-10 MONO Seal can be reinforced with fabric.

AMEX®-10 MONO Seal works safe in infiltration situations by involving static support.

### Profile of pipe
Circular profile, elliptical profile, egg shape profile, mouth profile, and cornered profile, e.g. quadrangular profile.

### Temperature/Liquid
**standard material:** – 10 °C to + 100 °C
**special material:**
up to 140 °C constant load
**Material selection:**
**EPDM:** potable water, storm water, raw water, sewer, leaches, soft acids
**NBR:** gas, oil

With critical liquids the rubber mix and the steel will be chosen in accordance with the analysis of the liquid.

## Installation of the AMEX®-10 MONO Seal

### Cleaning
In the installation area all pollution has to be removed mechanically in such a way that a clean and smooth surface exists. In case of depressions of the pipe wall a suitable material, according to the liquid, has to be applied to reach a smooth surface for the AMEX®-10 Internal Sealing System. Increases in the pipe wall have to be equalised by suitable mechanical methods. Very rough surfaces have to be treated with a coating.

### Access and set up
The AMEX®-10 MONO Seal is put in the pipe and is transported together with the retaining bands to the place of installation. The seal is placed exactly onto the clean and smooth pipe surface and is adjusted.

The set up of the seal follows by means of the two retaining bands.

### Pre-pressure
After the hydraulic expander has been fitted to the retaining bands a slight press on follows.

The correct fitting of the seal and the retaining bands has to be controlled.

Installation of the safety spindle for bracing between pipe wall and press follows.

By slow activation of the hydraulic pump and hammering simultaneously onto the retaining bands the pressure is slowly increased until the pressure gauge does not show a loss of pressure.

A suitable wedge is placed.

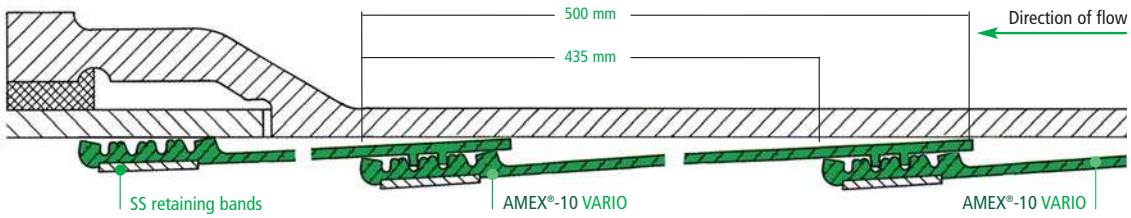
### After-pressing
In order to guarantee an optimal installation of the AMEX®-10 MONO Seal it is necessary, depending on the pipe material, to after-pressure the seal once.

### Quality check
The perfect fit and tightness of the AMEX®-10 MONO Seal can be tested by putting pressure through a super flat test valve to the seal.

After having inflated the seal a leak detecting spray is applied to the end wall of the seal in order to detect escaping air.

With extremely leaking joints temporary sealing of the joint is required.

## Sealing with the AMEX®-10 VARIO Seal




The **AMEX®-10 VARIO Seal** bases on the principle of the AMEX®-10 MONO Seal. Numberless VARIO Seals can be connected to an endless unit by choice. Each AMEX®-10 VARIO Seal is geared and secured to the next seal, this avoiding a replacement and sliding.

The VARIO System always starts or ends with an AMEX®-10 MONO Seal in the width between 260 – 500 mm. It is possible to combine all components of the AMEX®-10 Internal Sealing System, such reaching a high flexibility during installation.


### In operation

- Installation in diameters not suitable for liner systems
- Installation as a short liner system to protect variable wide leaks or joints
- Corrosion protection of complete pipe systems against aggressive liquids

### Advantages

- By variable shaping any installation length can be realised
- Installation even if condition on site changes unexpectedly
- Absolute sealing caused by gearing compared to other sealing methods
- Flexible and fast installation due to combination with the standard system

## Operation areas of the AMEX®-10 VARIO Seal

**Damage of the Pipe**
The pressure pipe, material pre-stressed concrete, has two clear cut damages:

- leaking joints
- leaking stoppers caused by test drills.

Rehabilitation by liner was not possible because of access and length of pipe. The total length of the pipe was rehabilitated after survey and sealing of test drills by the AMEX®-10 VARIO System.

Sealing of a pressure pipe diameter 1800 with AMEX®-10 VARIO System

Partial sealing with AMEX®-10 VARIO System

Application of the **AMEX®–10 VARIO System** in the area of partial sealing offers cost saving. This system just seals the areas you want to be sealed such making a complete renovation of a whole pipe length unnecessary.

Detail showing a AMEX®-10 VARIO installation under strong water pressure from outside

## New demands to the AMEX®-10 Internal Sealing System

**Further development**
During the course of the recent years the system has been adjusted to the latest requirements and has undergone further development.

We have developed new methods to install, new shapes of the seal and new rubber mixtures for all applications.

Installation of AMEX®-10 MONO Seal in an egg shaped sewer

AMEX®-10 MONO Seal, width 600 mm with side branch, width 300 mm, for a pressure tight seal for a side branch

**AMEX®-10**
**Internal Sealing System:**

- Installation under water
- Installation in special profiles like cornered or mouth profiles
- Vertical or horizontal sealing of containers
- Installation of AMEX®-10 special profiles

Installation of AMEX®-10 MONO Seal with divers in a flooded pipe system

## Sample applications of the AMEX®-10 Internal Sealing System

Sealing of a pipe running across a bridge in Scandinavia with AMEX®-10 Internal Sealing System, temperature range: -30 °C to + 25 °C.

AMEX®-10 VARIO fitting in action: corrosion protection

Sealing of a potable water pipe with AMEX®-10 MONO Seal, 366 mm wide with inflating water

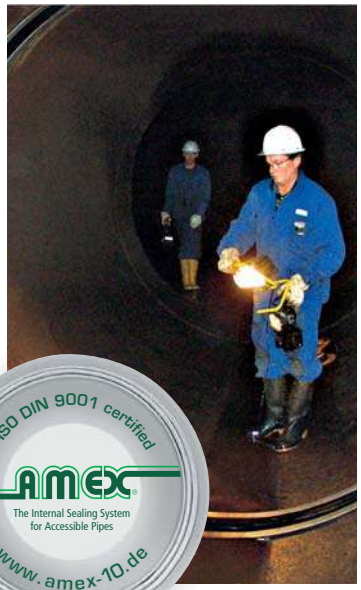
Sealing of a construction joint in a container for potable water, corner shaped, with AMEX®-10 MONO Seal

## Qualitycontrol of the AMEX®-10 Internal Sealing System

**Material**
All materials for the AMEX®-10 Internal Sealing System undergo a thorough quality control. The material for rubber and steel are chosen to suit the requirements of the liquid they will be applied to.

All rubber- and steel materials we use have been tested and certified by independent test institutions and suit the required application.

**Licensees and partners**
We only supply the AMEX®-10 Internal Sealing System to licensees, Partners or authorised Installers. This guarantees our users that our installation instructions for the AMEX®-10 Internal Sealing System are kept and that they can trust in a competent installation and a long life of our product.




**(from left to right:)**
1. Inspection and control of the correct installation by the client
2. Testing of the flexibility and defining the tear point
3. Air pressure test of AMEX®-10 MONO Seal

# Licensees and Certificates of the AMEX®-10 Internal Sealing System

## Certificates

Germany:

- DIN EN 681-1 2003 – 05
  Water / Sewer
- DIN 53504
  Physical Test
- DIN 4060
  Physical Test
- DIN DVGW W 270 tested
  Water
- KTW – Recommendation 1.3.13
  Water
- DIN 3535-3
  Gas

International:

- BS EN 682: 2002
  Gas
- BS 6920
  Water
- CERTIFICATE OF COMPLIANCE
  ANSI / NSF Standard
  Water
- ASTM Standards
  Gas / Water
- Test Lifetime 50 years
  (RAPRA)


## Licensees

Argentine
Australia
Austria
Belgium
Canada
Chile
China
Finland
France
Great Britain
Greece
Hong Kong
Hungary
Italy
Kuwait
Netherlands
New Zealand
Pakistan
Portugal
Russia
Serbia-Montenegro
Singapore
Spain
Switzerland
USA

# AMEX®

The Internal Sealing System for Accessible Pipes

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