A PERFECT MATCH!

Successful milking with GEA liners

GEA Engineering for a better world.

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CONTENTS

THE RIGHT CHOICE MAKES THE DIFFERENCE!

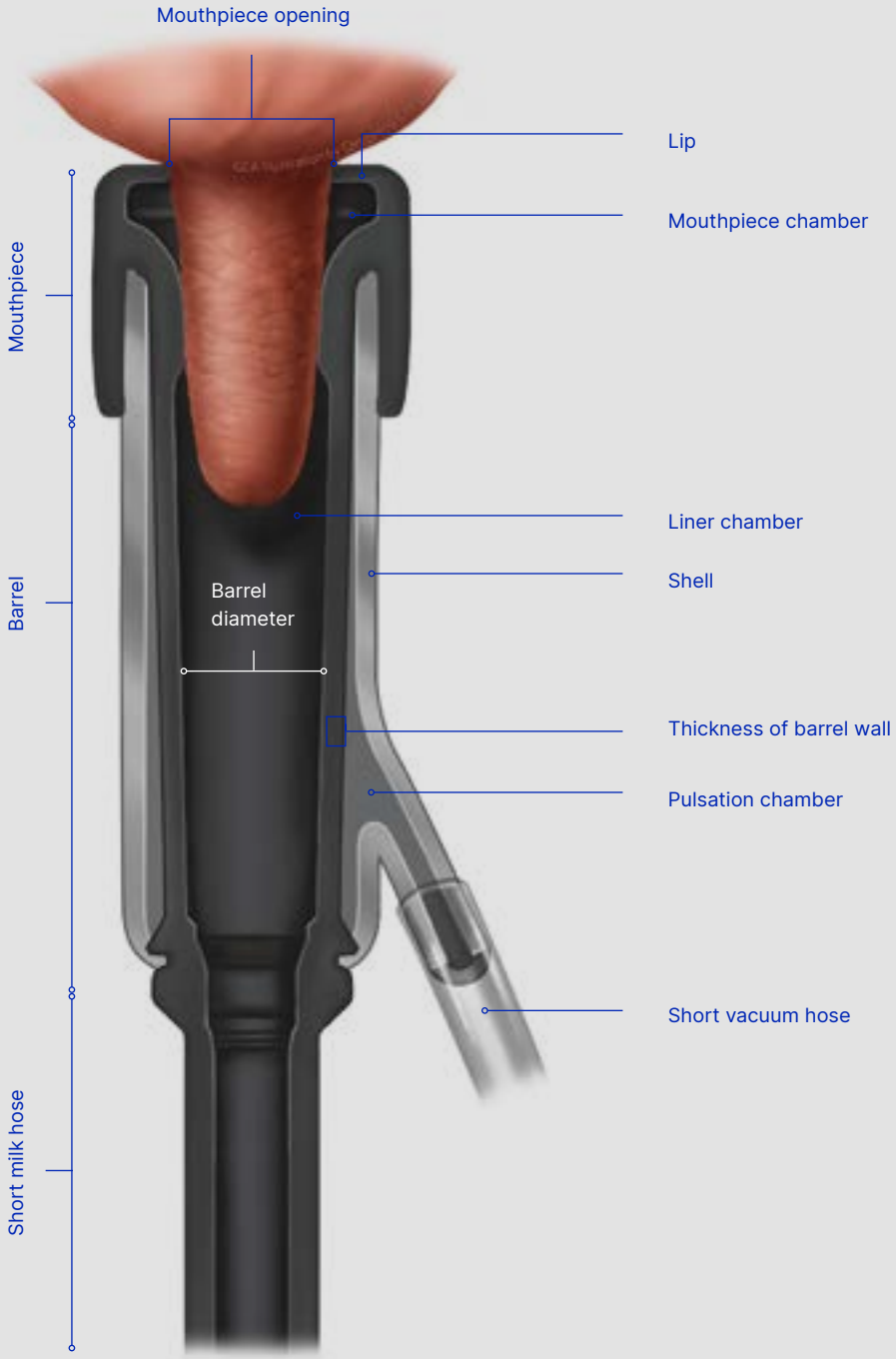
Explore further

Independent from herd size most farmers have two main questions. How can I make my daily milk production process as reliable, cost-effective and animal-friendly as possible? And what do I need to optimise to do so?

This is where the liners come into play. As the interface between the cow and the milking unit, they play a crucial role in achieving optimum milking results. Comparable to the choice of tyres for a car: To achieve maximum performance, safety and efficiency every time you drive, the size and material properties have to fit the model perfectly. One liner for all would be ideal, but it doesn't exist. As breeding progresses, the size and shape of the teats and udders have changed and sometimes differ considerably within a herd.

More than 30 liners – designed with farmers, for farmers

Ideal milking with the best animal health: it's possible with the right choice of liner! Developed in close cooperation with dairy farms all over the world, the GEA liner range comprises more than 30 types made of silicone and rubber in a wide variety of sizes and barrel shapes. Quality-controlled and certified to the latest standards. So you always get the best solution for your requirements – even across multiple generations of cows.



Liners – true performance athletes

GEA liners are true performance athletes: With a working life of 5,000 milkings, the silicone liner opens and closes more than 5 million times to ensure milk flow. Original GEA liners guarantee optimum milking performance over their entire lifespan, whilst also keeping your animals as healthy as possible.

Liners consist of three main components:

- Mouthpiece
- Barrel
- Short milk hoses

The performance of a liner is determined by four key factors:

- Barrel diameter and size
- Material: silicone or rubber
- Barrel shape
- Mouthpiece geometry

The teat cup is an assembly consisting of a shell and a liner and is equipped with a short pulse tube and short milk hose.

GEA'S MILKING PHILOSOPHY

The holistic GEA milking philosophy ensures your long-term milking success with high milk yield and healthy cows – safely, gently, quickly and without compromise. Your local GEA dealer will be happy to assist you every step of the way. This saves you time, money and nerves.

Milking Safely

starts with providing a safe milking environment for the cows and operators. Properly adjusted vacuum levels and pulsation settings, coupled with the selection of liners and detach settings, will greatly influence a safe milk harvest. Milking clean, dry, and well-sanitized teats is the primary objective. After the milking process, reducing the bacteria remaining on the teat will also decrease the risk of infection and greatly improve udder health.

Milking Gently

is the ability to collect milk from each individual cow in a calm, comfortable and relaxed manner to ensure that the cow enjoys the milking process. A gentle milk harvest is accomplished through proper milking system settings. Proper machine settings reduce the risk of this type of discomfort and require that components be integrated into one operating system.

Milking Quickly

refers to milking efficiency. Milking time is mainly influenced by the milking system and operating parameters, but cow movement times along with milking procedures also influence milking times. In general, average milking unit on-times of less than eight minutes for twice a day milking or less than six minutes for three-times-per day milking are goals to keep in mind.

Milking Completely

is a key objective of milk harvest. Excessive amounts of residual milk – are not to be left behind. Liners, pulsation, vacuum and detach settings play a key role for a complete milk harvest.

ALL LINERS ARE THE SAME? A COSTLY MISTAKE TO MAKE ...

Having things fit with a bit of wiggle-room might work for many hobby craftsmen, but not for a professional milker like you. Because, if you start to hear air leakage during milking, something is already wrong.

This can mean that the wrong liners are being used. They do not or no longer suit the teats and therefore cause attachment issues. The consequence: air leakage, which you hear as a slurping sound from the milking unit. It's a mistake that has expensive consequences for farmers and their animals: ineffective milk-out with lower milk yields, stressed cows and poor udder health. But choosing the right liner is not rocket science.

When choosing liners for the milking claw, simply follow this formula: size + material + barrel shape.
Because one size does not fit all ...

The heart of your milking system
You can compare the role of the milking claw in your milking unit to that of the heart: a strong muscle, collecting the milk and transferring it to where it's needed. Its performance determines milking success. But it has to work in tandem with the right liner. This is the only way that the milking units work efficiently and gently on your animals. You need to find the perfect combination ...

Fine-tuned to your farm's needs
The most important thing in your milking parlor: choosing the right milking unit that perfectly matches your milking strategy and herd in terms of function, performance and efficiency. And a matching range of liners with which you can fine-tune the milking performance optimally to the udder conditions of your herd.

Finding the right match
Whether you have a small herd with average milk yields or run a large dairy full of high-performance animals, you can always find the right silicone and rubber liners for your GEA milking units in our range – user-friendly, powerful, long-lasting and comfortable for the cows.

FIRST THINGS FIRST: SIZE MATTERS!

When it comes to choosing the right liner, you have to do things in the right order. Start with the most important thing first – and here, that means choosing the right size.

The length and diameter of the liner have to suit the teats of your herd. They should fit like a glove: not too tight, not too loose, not too short and not too long. What might fit a Holstein-Friesian perfectly could be completely unsuitable for a Simmental Cow. This could then result in poor adhesion and massage stimulation, transfer of mastitis pathogens, hyperkeratosis, teat cups climbing or complete fall-offs of milking units.

No off-the-rack solutions …

Every farm is different – so is milking. A standard, off-the-rack solution is normally just a compromise. But what do you get from us? Many different types of liners – developed in line with the individual requirements and needs of experienced professionals like you. So you can be sure that your GEA milking unit always provides the best performance. Whether you have been working with a Classic claw for years or have just installed the latest generation of GEA automated milking systems (AMS).

MATERIAL SELECTION: SILICONE OR RUBBER

Once you have decided which size you need, you can move on to softer factors about the liner: whether to go for a silicone or rubber option.

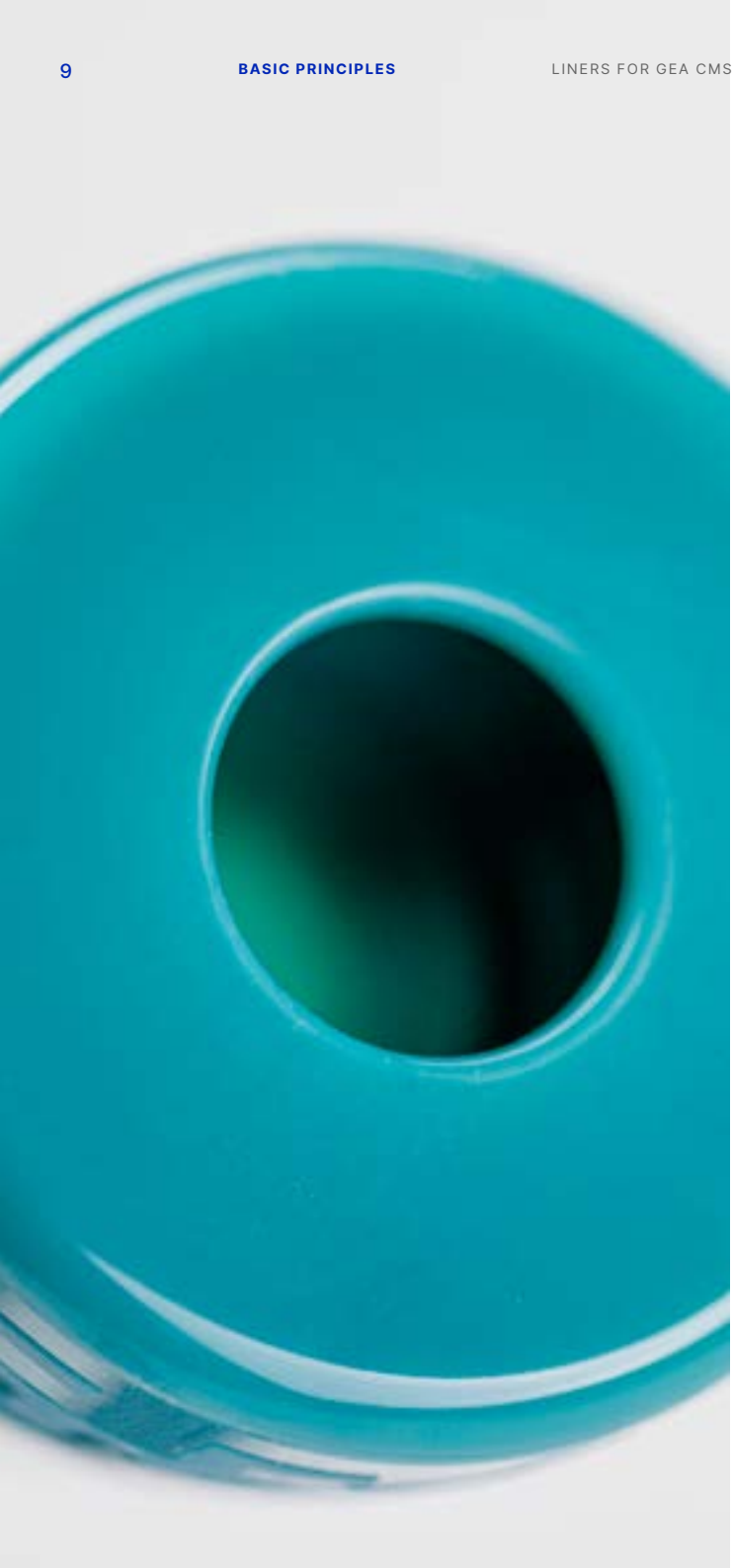
GEA carries out comprehensive field and quality tests on both materials before they are approved for use on farms. As well as high mechanical durability, the liners also have to be resistant to influences like butterfat absorption and chemicals such as detergents and disinfectants. This means that you can rely on that both materials can ensure high-quality, hygienic, and smooth milking processes at your farm.

Middle distance or marathon runners?
The main area in which silicone and rubber liners differ is their lifespan. While a rubber liner is a good middle distance performer with a lifespan of 2,500 milkings, a silicone liner lasts 5,000 milkings, making it more of a marathon runner. Dairy farmers with large herds in particular prefer these as they lengthen the intervals between time- and cost-intensive replacements.

Silicone liner Rubber liner

The most important features at a glance

	Silicone liners	Rubber liners
Lifespan	++ 5,000 milkings	+ 2,500 milkings
	++ 50% fewer changes per year, reducing labor costs.	
Elasticity and softness	++ Adapts well to the teat: gentle, effective and constant massage and milking through-out its lifetime	+
Cow health	++ Liner surface remains free from tears over the long term: mini-mises the risk of pathogens growing on the surface	+
Environmental influences	++ Insensitive to environmental influences, e.g. temperature, ozone and chemicals	+
	++ Fewer liner changes per year reduce the carbon footprint of manufacturing, logistics, and on-farm processes.	
Mechanical overstress	+ Liner mouthpiece is protected from damage with integrated shock absorbers rather than traditional protective devices such as a plastic fringe	++ More resistant to, for example, scratches from sharp housing edges or hooves
Cleaning management	+	++ Appropriate cleaning routines are essential for any liner, regardless of the material. Silicone, for example, is less sensitive to detergents and disinfectants, but has higher requirements with regard to process parameters, e.g. water temperature



LINER BARREL SHAPES – IT'S WHAT'S INSIDE THAT COUNTS

So you've chosen the size and material for your liners. But what about the inside of them? Or to put it another way: which barrel shape is best for your herd?

Generally, you can choose between cylindrical (straight) and conical (tapered) models. The decision you make will depend on the most common teat size within your herd – choose a model that matches around 80 percent of the cows. In inhomogeneous herds, where a relatively equal number of cows have straight and tapered teats, the tapered version is the better choice as its funnel shape can adapt to a wider variety of shapes.

Round liner range with corners and edges

GEA's round liners are designed to cover the teats completely. This ensures a secure grip with perfect stimulation and massaging effects, as well as ideal milk flow rates and yields. Non-round GEA liners do not cover the entire teat. A disadvantage? Not at all. They work just as well as the round liners, just in a different way. The massaging effect does not work directly on the teat canal, which reduces the mechanical strain on the canal during the liner's massage phase. This can help you to improve teat condition within herds that are more prone to hyperkeratosis. But remember: non-round liners still have to fit the herd and be configured correctly.

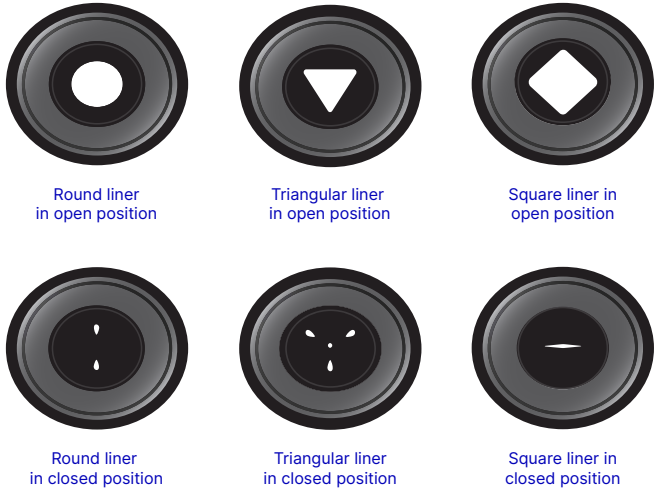
The primary difference between the round, triangular and square liners is the way they collapse to massage the teat.

The perfect combination: the innovative GQ liner

New and unique: the innovative design of the GEA GQ (Gentle and Quick) liner combines the best features of round and non-round barrel shapes. The benefits of the GQ liner? An optimum massaging effect throughout the entire milking process, appropriate levels of stimulation, a secure hold without air leakage and additional repositioning of the milking claw, and support of efficient milking.

The depth to which the teat dips into the liner has a large impact on the massage effect and therefore milking duration and milk-out quality. This particularly affects very short teats within a herd.

1 Different barrel shapes collapse in different ways. Aerial view of round, triangular and square barrels in their open and closed positions:



Round liner in open position

Triangular liner in open position

Square liner in open position

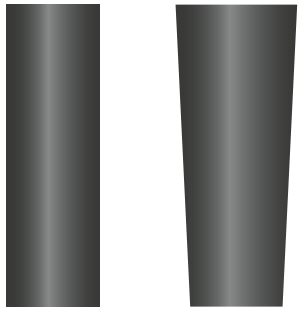
Round liner in closed position

Triangular liner in closed position

Square liner in closed position

GQ liner – unique design feature:
4 rounded openings in the barrel that are not connected to the liner mouthpiece prevent a high head vacuum – without any additional components such as vent openings on the mouthpiece itself.

2 The liner barrels can be cylindrical or conical:



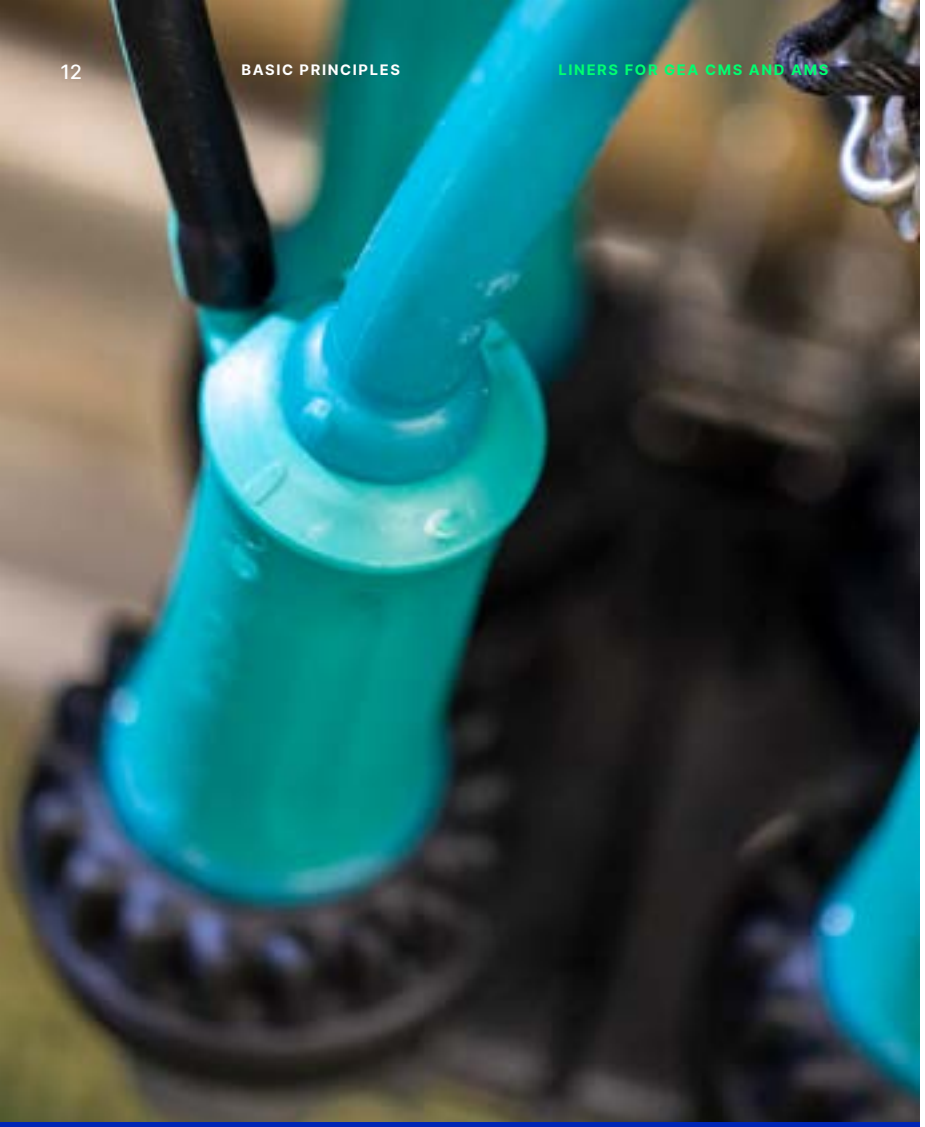
THE NEW GENERATION: GEA GLOBAL LINER

The liner portfolio for use in our innovative GEA Global Composite Shell – for a faster milking process with optimized milk yield and hygiene.

Always optimally aligned: AntiTwist technology guarantees secure positioning of the one-piece liner in the global GEA shell – precisely aligned and twist-proof. This is ensured by a top-to-bottom locking system based on the key-lock-principle. This also includes an innovative barb system located under the liner skirt, which holds the liner head precisely on the shell and also prevents moisture and debris from entering the pulsation chamber. Another advantage: Like the global shell, the new liners score points with their minimized weight. This reduces the strain placed on your cows by the milking equipment and makes handling easier during milking.

Does not fit does not exist
The new Global Liner portfolio offers completely new geometries as well as some favourites from the past. These new and updated shapes ensure an excellent teat-friendly fit with an efficient massage effect. Perfect for milking herds of any teat make-up with the right liner without sacrificing performance. Our Global Liner portfolio offers you a variety of sizes to meet the different needs of large and small dairy farms - in silicone or rubber, cylindrical or conical barrels, shaped or round, and vented or non-vented.

Your advantages at a glance
- More efficient milking
- Fewer interventions and corrections by milking operators, e.g. reattachment or manual corrections
- Easier to handle shells and lightweight milking
- Less effort needed for lifting and attaching claws
- Higher throughput in the milking parlor thanks to faster milking
- Optimum milk yield
- Better udder health and teat condition
- Healthy cows and economical milking



ONE FOR ALL: THE NEW GEA GLOBAL COMPOSITE SHELL

The innovative shell generation suitable for all GEA liners with AntiTwist technology

Your advantages at a glance

- Excellent dimensional stability of the liner in the shell thanks to AntiTwist locks at the top and bottom
- Easily recognizable alignment triangles to match the GEA liners with AntiTwist technology
- Ergonomic shell design for safe, quick attachment of the milking unit
- Recessed ribs and flared base provide additional grip when attaching the milking unit
- Excellent durability and longevity
- Smooth surfaces and limited engravings prevent the accumulation of slurry, manure and soil

Technically optimized, the extremely resistant, durable and lightweight new composite shell ensures perfect interaction with all GEA liners equipped with the new AntiTwist technology. To achieve this, it has a lock-like design that fits seamlessly with the AntiTwist components in the head and center of the liner. The liner is thus held precisely and twist-free in the GEA Global Composite Shell and can achieve its optimum performance.

LINERS FOR CLASSIC CLAWS

The Classic 300 and Classic 300 Evolution (E) are GEA's all-rounder milking unit. Dairy farms all over the world trust these tried and tested milking claws primarily due to their robust and easy-to-use design.

Both milking units are designed for simple milk processing with direct, undiverted milk flows. One thing that is very important for you as a farmer: as with all GEA milking units, we offer a special range of liners for the Classic 300 and Classic 300 E systems that you can use to customise your parlour and react quickly to changing requirements, such as new udder shapes and teat sizes.

The perfect Classic fit
The Classic 300 is best suited to cows with normal to wide teat positions. But if you have modern, high-performance cows with narrow standing rear teats, the Classic 300 E is the perfect choice as the short milk hoses are positioned closer together.

Your benefit: the largest range of liners ...
Ensure your Classic milking unit suits your herd perfectly with GEA's global liner portfolio – available in rubber and in silicone. Another plus for this liner range: to help you fine-tune your liner/milking unit combination, you can also pick from round and non-round as well as cylindrical and conical models.

LINERS FOR THE IQ CLAW

This quartet is in a league of its own. The IQ milking unit from GEA is fitted with revolutionary four-way technology, designed specifically to match the natural udder structure. The milk flows quickly and directly to the outlet from each individual udder quarter.

These liners enable you to milk your high-performance cows more efficiently, whilst also reducing the risk of teat-to-teat contamination with mastitis pathogens.

Unique: individual liner attachment, without the vacuum cleaner effect
Another unique feature: the suction of the vacuum is blocked by stainless steel balls when the teat cup is not attached. This also prevents impurities such as manure and dirt from being sucked into the milk line. Easy to use? Definitely. Easy attachment, easy milking, easy maintenance. Which means maximum milk quality, quantity and udder health.

Exclusive liners for IQ milking units
The choice is yours: the series is comprised of Global IQ liners in both rubber and silicone, both of which have been developed exclusively for IQ milking units. One of the many advantages of these single-piece liners is that the special mouthpiece design not only provides optimum grip, but is also incredibly flexible so it can adapt to different udder shapes.

Unique liner design
Global IQ liners in both rubber and silicone work together with IQ milking units to provide reliable, animal-friendly milking whilst support keeping the teats in the best condition possible.

- Versatile mouthpiece design
- Integrated and patented shock absorber Global IQ SIlicone
- Anti-twist solutions at the shell
- Patented and flexible milk hose
- Nozzleless connection to the claw
- Clear, engraved fitting marking on the mouthpiece

Global IQ Silicone Liners **Global IQ Rubber Liners**

Whether you use Global IQ Silicone or Global IQ Rubber Liners, the individual design means that you can take advantage of all of the key milking benefits your IQ milking unit provides.

Global IQ Silicone Liners

Global IQ Silicone Liners are made from high-tech silicone, making them almost as flexible and adaptable as your own hand. The Global IQ's uniquely flexible mouthpiece fits gently onto all teat shapes and creates a reliable seal on the bottom of the udder. The silicone liner always retains its elasticity regardless of the ambient temperature, which means that its milking properties remain constant, guaranteeing continuous high performance.

The one-piece Global IQ is available in a range of different barrel shapes and sizes with a variety of barrel and mouthpiece opening diameter options to choose from.

Global IQ Rubber Liners

The way the Global IQ Rubber Liners attach individually to your IQ milking unit is completely unique. The tried and tested rubber material ensures that the liners works reliably whilst being gentle on the teat, with optimum adhesion and flexibility on the udder.

To ensure that your IQ milking unit adheres perfectly to the udder, you can choose from multiple sizes of Global IQ Rubber Liner, including a conical version that is particularly suited to growing dairy farms with inhomogeneous teat sizes.

1 Secure and problem-free assembly: anti-twist feature and clear installation marking for complete clarity
2 Secure and fast assembly: anti-twist feature and integrated and patented shock absorbers protect the silicone material from damage
3 Perfect positioning: narrowing directly below the shell and a specially pre-formed milk hose help to ensure perfect positioning
4 Maximum flexibility for good adhesion: nozzleless connection to the claw without an sight glass ensures correct and flexible positioning during milking; thickening at the end of the short milk hose ensures that the shells drop away evenly

LINERS FOR THE APOLLOMILKSYSTEM

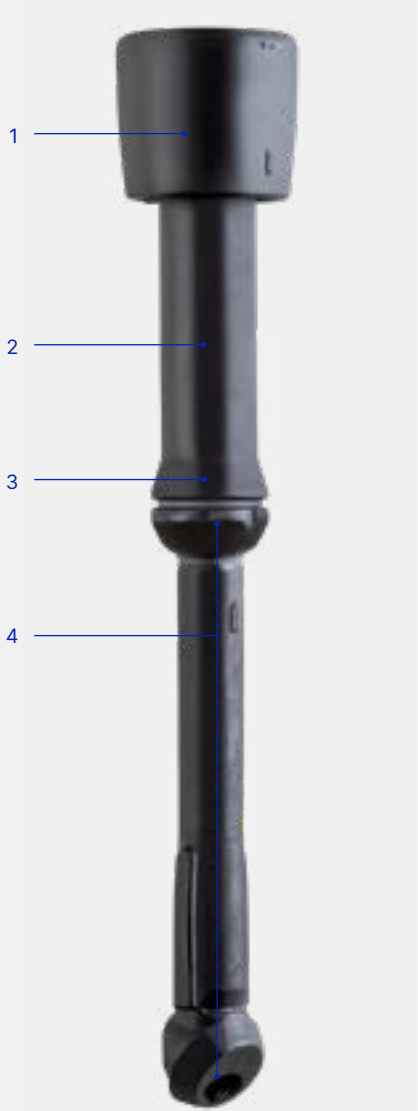
With the patented ApolloMilkSystem, you're milking in First Class with your conventional parlour. It is the first system of its kind to offer an automated post-dipping and disinfection process in conventional parlours without affecting milk quality.

This solution is as easy to use as it is practical and safe: automated dipping and a back flushing after removal are all carried out via the liner mouthpiece. It works like this: the ApolloMilkSystem carries out a dipping procedure on each teat while it is still in the liner after milking. This means that the entire teat surface, including all wrinkles and bumps, is perfectly coated and protected when the cow goes back into the outside environment. So you benefit in two ways: you don't have to do as much time-consuming work, and your herd's health is protected automatically.

Based on the IQ 4-way milking unit
The ApolloMilkSystem uses the separate four-way technology of the IQ claw to combine automated dipping, cleaning and disinfection with a fast, safe and gentle milk out of each individual quarter.

ApolloIQLiners for the ApolloMilkSystem
The single-piece rubber liners in the ApolloIQLinerrange are available in a variety of sizes with various barrel and mouthpiece opening diameter options. This ensures maximum flexibility and adaptability to different teat and udder shapes.

Your benefits at a glance
- Automated dipping, rinsing and disinfection in a single milking process
- Removes around 95 % of all potential pathogens
- Automated work routine with consistent levels of safety
- Precise, economical dipping agent dosage
- Quiet, ergonomic and stress-free milking



The dipping process with the GEA ApolloIQLiner
The dipping agent is injected onto the underside of the liner lip. The patented design of the liner mouthpiece ensures that the dipping agent flows evenly around the teat. Applying the dipping agent at the base of the teat ensures complete coverage before the teat is exposed to external influences.

ApolloIQLiner rubber liners

With the ApolloIQLiner, you can start straight away! Unlike other liners out on the market, you don’t need additional time for installing further equipment such as ventilation systems or dipping nozzles. Everything you need for automated dipping and backflushing with the ApolloIQLiner is right there inside the liner itself.

Another plus-point:
the oval barrel shape determines the direction in which the barrel of the liner collapses. This means that the liner barrel is prevented from touching the Shell‘s inner dip channel as it moves.

1 Patented mouthpiece for optimum dipping and milking results
2 Efficient, unrestricted milking: the oval barrel determines the massage direction to prevent it from hitting the inner dip channel in the shell without influencing milking performance
3 Perfect positioning: narrowing directly below the shell and specially pre-formed milk hose help to ensure perfect positioning
4 Maximum flexibility means good adhesion: nozzleless connection to the claw without an sight glass ensures correct and flexible positioning during milking; thickening at the end of the short milk hose ensures that the shells drop away evenly

LINERS FOR GEA AUTOMATED MILKING SYSTEMS (AMS)

More time for what's important – more and more dairy farmers are enjoying the benefits of GEA's automated milking systems. For you, this might mean having more time for herd management or your family and hobbies.

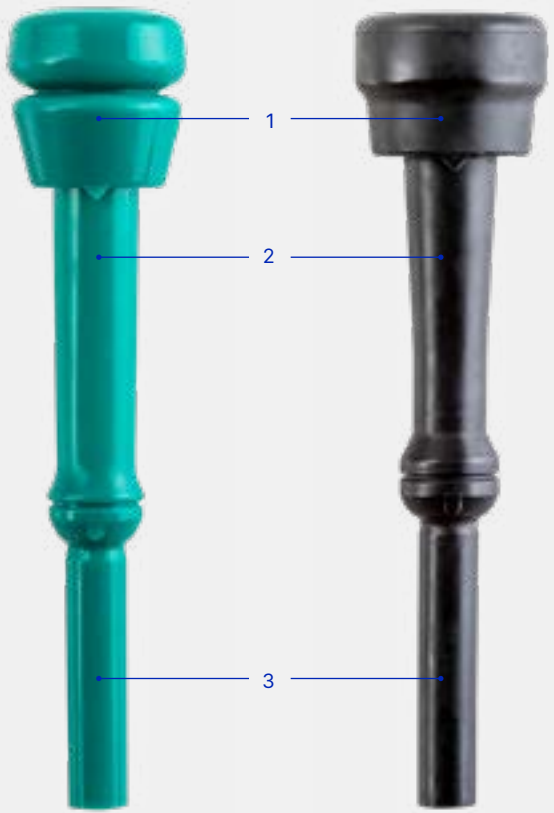
The global trend toward automated milking systems continues. GEA's AMS solutions offer an enticing combination of easier working processes and more flexible working hours – for operations of any size. This makes them an exciting alternative to conventional milking technologies as they allow you to milk your herd more than twice a day with minimal effort.

Unique all-in-one process inside the liner

What makes milking with an automated milking system from GEA so different? The entire milking process, from preparation to detachment, takes place automatically inside the liner. Once attached to the udder, all of the subsequent steps are carried out inside the silicone or rubber liner: cleaning, stimulation, fore-stripping, milking and dipping.

On the safe side, automatically ...

This technically sophisticated all-in-one process from GEA is unique amongst automated milking systems worldwide, and therefore requires specially-designed liners. We have developed a range of silicone (AMSPro) and rubber (AMSLiner) liners that covers all of the different barrel, mouthpiece opening and mouthpiece diameters you could need to ensure they fit your animals' teats perfectly. So you can milk successfully, every time.



The all-rounders: AMSPro and AMSLiner

The AMSPro and AMSLiner are all-rounder liners that can manage the recommended manual milking steps for you automatically. Like every GEA Liner the AMSPros and AMSLiner are intensively tested, assessed and certified. Hence, using them guarantees you lasting functionality and a consistent milking routine for every milking procedure, whilst adhering to all hygiene standards applicable to dairy farms.

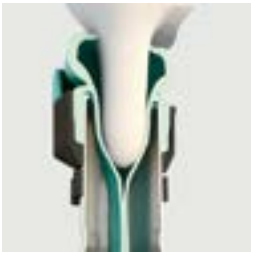
1 Udder health: various mouthpiece geometries to choose from to ensure consistent dipping results – reliable protection of the udder over the entire lifespan
2 Adaptability and efficiency: various shapes and sizes allow optimum adaptation to teat sizes. So nothing should stand in the way of efficient milking!
3 Performance: all materials undergo long-term on-farm testing and meet all common food safety standards

Keep it – In-Liner-Everything

1. Attachment

2. Cleaning

3. Stimulation



4. Fore-stripping

5. Milking

6. Dipping

BETTER TO BE SAFE THAN SORRY

Always keep an eye on replacement intervals!
Treat your liners as you would do your car tyres:
even the best materials will eventually start to wear.
Changing them at the right time helps to ensure
the performance and quality of your milking process.

Silicone liners

5,000

milkings

Rubber liners

2,500

milkings

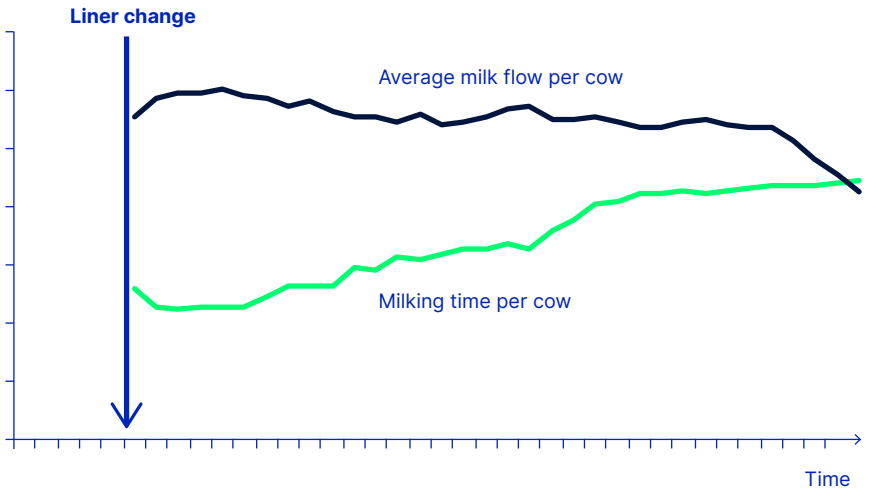
How long a liner lasts depends largely on its material and how long it is used on the farm. But you will always be on the safe side if you follow GEA's recommended replacement intervals.

Rubber liners should be replaced after a maximum of 2,500 milkings on a 2x herd or 6 months and silicone liners after a maximum of 5,000 milkings on a 2x herd or 12 months, whichever comes first. Depending on the length of milking and the number of milkings per day, the maximum number of milkings may be increased, contact your dealer for more information.

Video

Detergents and disinfectants
Important for optimal liner life: always use the detergents and disinfectants recommended by GEA in the recommended dosage. If you exceed the recommended dosage, it can affect the condition and performance of the liner, and therefore its lifespan.

Lower milk yields and longer milking times



Changing a liner too late has a negative impact on milk characteristics: milk flows and yields fall, milking times lengthen. The consequences: the herd's performance potential is not fully taken advantage of, the milk quality can drop and the risk of mastitis increases.

Replace late, face the consequences

The liner is one of the most active parts of the milking unit, opening and closing millions of times over its lifespan. This huge amount of work wears away on the material and causes changes you may not recognise straight away, such as in the shape of the liner, its tension and flexibility and the condition of the surfaces.

If the liner is replaced too late, microscopic or even visible cracks can form in the barrel and short milk hoses, which then become ideal breeding grounds for pathogens. The tension in the barrel may also become too low. Possible consequences of this could be an insufficient massaging effect and milk flow, and deformation of the lip that increases the risk of the claw slipping during milking.

GEA DAIRYSERVICE – SAFEGUARD YOUR SUCCESS TOGETHER!

Are you a dairy farmer and want to drive the success of your farm forward through optimized milking? Then the liners you use should be precisely matched to the teats in your herd and to your milking system and unit settings – for the best milking performance, udder health and high cow comfort day after day.

It is a real challenge to make the right decisions here. So it's better to play it safe! The milking experts in GEA's worldwide dealer and service network are there to help you with advice and support – around the clock, 365 days a year ...

Contact your local GEA dealer for a personal on-site consultation. Together we will find tailor-made solutions to make your dairy farm even more profitable, sustainable and future-proof - regardless of the size of your farm. At GEA, we call this Next Generation Farming.

Dairy Farming Dealers

Engineering for a better world.

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