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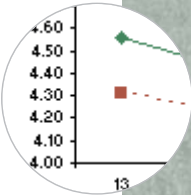
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# The Green Liner File

*Promoting healthy dairy products and practices.*

## Vacuum

*by Chuck Laney, President*

What is high vacuum? Anyone reading this has a number in their head right now that they would say is high vacuum. Have you ever stopped for a second to think about how you got that number?

Perhaps an “expert” told you what that number is. It was probably based on a study done at a very reputable university. Most of the time we are spared the specific details and we jump right to the executive summary.

Maybe you read it somewhere. It might have been in a magazine, or a pamphlet you picked up at a show, or maybe even in a newsletter just like this. You probably read it as part of some guidelines or system benchmarks.

Your number might have come from a very technical human resource representing your equipment or liner. He or she certainly has the knowledge and experience to tell you what is too high for a cow. They have seen many farms and they have to know what works...how else would they be the technical resource?

You may even have first hand experience. For whatever reason, you went out and turned the vacuum pump up to your number, just to see what would happen. Things might have been alright for a while, but eventually you saw something you didn't like and you returned the settings.

At Lauren AgriSystems we have read the studies and articles, talked to the technical resources, and have done

the experiments. What we have found over and over again is that the liner is the driving force behind performance. No one buys a truck based on the gas they want to use, they buy a truck based on the performance they need.

As you read through this issue, we want to give you our thoughts on how to choose a milking vacuum, what a bad vacuum setting is and why the Lauren Liner is designed for your goals, not for your pump.

Thank you,



## Vacuum Level?

by Rich LeViere

What should my system vacuum level be? What is too high and what is too low? Why should I set my system at one vacuum level and not another? Let's try and cover a few of these questions.

First let's address the claw vacuum standard that is a suggested or desirable level.

NMC, ASAE, and ISO all have the same "suggested" standard for average claw vacuum under peak flow. They all state that "An average claw vacuum between 35 and 42 kPa (10.5 inHg and 12.5 inHg) during the peak flow period is **generally considered a desirable level.**" NMC guidelines actually state that "this level is considered a good compromise to allow cows to be milked gently, quickly, and completely." When this standard was written, all tests and observations had been done with "conventional" liners with touch points (touch point = the vacuum required to bring a liners walls together to

the point of first touch) ranging between 2.5 inHg and 5 inHg. Or as we say "with tools not meant to be used at higher vacuum levels."

### Three things we know for sure are:

1. The higher the touch point of the liner the more vacuum required to close the liner.
2. The higher the touch point of the liner the less compressive load on the teat end.
3. The liner is the only part of the milking equipment touching the cow.

When setting your vacuum you want to be sure you have enough vacuum to close the liner and have enough vacuum left over to provide adequate massage to the teat. Vacuum massage levels have been suggested to be 4.5 inHg to 8.5 inHg. Take the touch point of your liner plus massage and you come up with a vacuum level to start with. Then take some average claw vacuums under peak flow to make sure you have proper closure of the liner during the milking of the cow.

**What should my system vacuum level be?** The answer is "to the level your liner allows you." You should set your system vacuum to the liner you are using. Ultimately your cows will tell you. Are their teat ends white to a light pink when the units come off the cow? You have ten seconds after unit removal to check teat color. No one is saying set your low line system at 15 inHg to 16 inHg. But if you are using an 8.5 inHg to 9.5 inHg touch point liner you would definitely want your vacuum in the 14 inHg to 14.6 inHg range to ensure adequate massage.

Don't be scared of higher vacuum, and let's try and do a better than to just compromise when setting vacuum. Let's try and milk our cows more comfortable. Understanding vacuum and its relationship to the liner you're using is just one more attention to detail that helps our high performance systems milk today's high performance cows.

## Dairy Spotlight: Ontario, Canada

Lauren AgriSystems first crossed into Canada in January of 2007. Quickly over 8,000 dairy cows realized the value of the Lauren Liner. Now two dealers and a group of Canadian dairymen know what a significant difference a liner can have. It's not that easy to single out just one success story, so we are putting the spotlight on the entire region of Ontario, Canada.

"Most of our installed milking systems were providing a solid foundation for good cow milking. Unfortunately, we were missing one critical element, the right "liner". The Lauren liner has allowed our dealership to implement a technical approach in matching the milking system performance to fit the liners requirements. *We are extremely pleased at the level of overall*

*performance we have been able to provide to our dairymen with the Lauren Liner.*" – **Mike and Bill Van Logtenstein, Dairylane** (Lauren Dealer)

"Our dairymen continually focus on doing a better job milking their cows. We really believe that the Lauren liner and the attention to system performance will provide us with a higher standard of milking cows than ever before. Our initial

response has been extremely positive" – **Rick Struyk, Owner, Conestoga Ag.** (Lauren Dealer)

"Liner squawks are virtually eliminated except for the broken down udders where the teats are sticking out to the side. Mature cows and the heifers don't kick or dance as much since the install of the Lauren Liner. Teat ends are a lot healthier and chances of new clinical mastitis is 10 times smaller if the teat ends are not busted up and rough. Our milkers can get the ends clean and the teat can close the way it was designed to when she goes back to the free stall. THERE IS NO WAY WE WOULD EVER GO BACK TO OUR OLD LINERS!"

**Kees Haamstra: St. Mary Ontario CA, 450 Cows**

Cows are milking out very nice and evenly and our overall milking speed has increased, Teat ends are much better and the cows just seem happier when they are in the parlor"

**Willem Bloemen: Elginfield, Ontario, Canada, 300 Cows**



Pictured above: Bloemen's Dairy

"With our old liners we were averaging a 6.2 minute on time. Since we installed the Lauren Liner and made the system changes they recommended our unit on time has dropped to 5.4 minutes with an average flow rate of 3.0 liters/minute. With the increased in milk out speed we were able to shorten the milking time by 1 hour per shift. Liners are milking out well and very evenly"

**J&L Walker Dairy: London, Ontario, Canada, 800 Cows**

"I would never consider going back to any other liner. The cows are much more comfortable and the liner milks out much better. Squawks have been eliminated except for the real bad udders which can be expected. Overall teat end health has improved dramatically in a very short time"

**Gerben Steenbeek: Woodham, Ontario, Canada, 350 cows**



# Vacuum Effects On Milking Performance (Summary)

by Aaron Kochman

Vacuum is one of the key components to promoting milk flow. It has been shown repeatedly that higher milking vacuum will result in higher milk flow rates and lower machine on time (Spencer 2007, Bramely et al. 1992, Rasmussen 2000). Because of this relationship it would be accurate to refer to flow as a function of vacuum. In order to gain a better understanding and demonstrate these effects, a short term study was designed and carried out at Lauren Dairy.

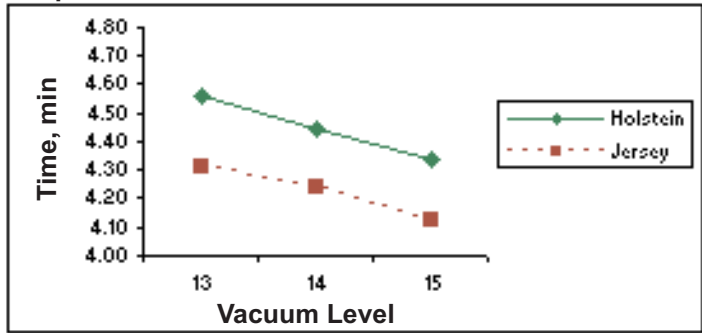
The study shows that increasing vacuum from 13 to 14 to 15 inHg will result in increased milking performance. Machine on Time (Graph 1) decreased .10 minutes, Average Flow (Graph 2) increased .15 lb/min., Peak Flow (Graph 3) increased .50 lb/min., and % Milk in 2 min. (Graph 4) increased 1.5% for each inHg increased. Yield (Graph 5) was the only variable that remained unchanged throughout each of the settings. This indicates that raising the vacuum from 13 to 15 has no significant correlation to the amount of milk harvested in this setting.

These results may not be equivalent on every dairy due to variation among dairies. There is more involved in harvesting milk than vacuum level. Milking equipment needs to be functioning correctly, prep procedures need to be effective, and the correct liner needs to be used. It is not recommended that you turn up the vacuum if any of these elements are not correct. You need to have confidence and reliability in your milking equipment and management strategies. The right liner needs to be chosen to ensure teat end health is maintained over a long period of time. This requires understanding the design and useful intent of the liner chosen. The Lauren Tri-Circle liner has shown that its design for higher vacuum allows high milking performance while maintaining yields. The liner has also shown that excellent teat end health can be expected while in use (Kochman 2006).

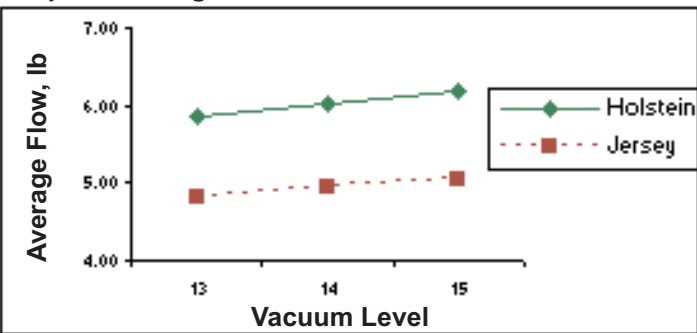
To read entire research paper, please visit [www.laurenagrissystems.com/info-research.aspx](http://www.laurenagrissystems.com/info-research.aspx)

Number of cows in study: 121 Holsteins, 53 Jerseys

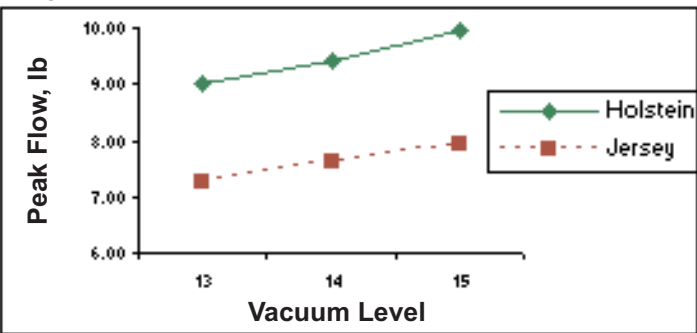
Graph 1: Machine Time Results



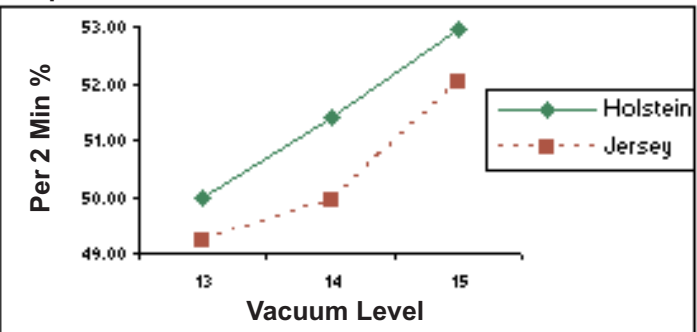
Graph 2: Average Flow Results



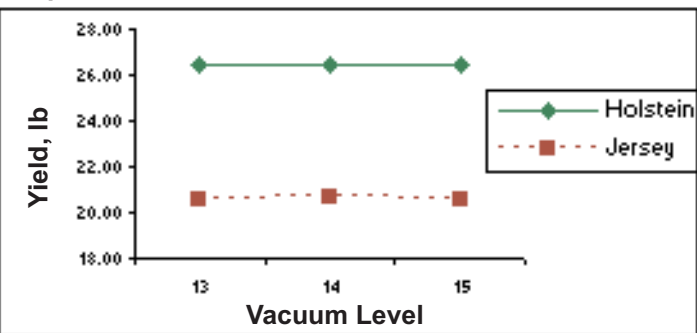
Graph 3: Peak Flow Results



Graph 4: Per 2 Min %Results



Graph 5: Yield results



## Show updates and recent news

### Ultrasound Clinic

*June 26, Millersburg, OH*

Lauren Dairy hosted an Ultrasound Clinic by EI Medical – Informative hands on training for veterinaries and individuals to use ultrasound equipment in diagnosing pregnant cows.

### Empire Farm Days

*Aug 7-9, Seneca Falls, NY*

Dairy Tent

[www.empirefarmdays.com](http://www.empirefarmdays.com)

### World Dairy Expo

*Oct 2-6, Madison, WI*

Exhibition Hall Booths 1701 & 1702

[www.worlddairyexpo.org](http://www.worlddairyexpo.org)

### New additions:

We would like to welcome two new dealers to the Lauren AgriSystems family:

#### Pacific Dairy Centre

Abbotsford, British Columbia

604-852-9020

#### Eastern Iowa Dairy Systems

Epworth, IA

563-876-3087

We look forward to continue success with the help of our new dealers!



## September Issue: Liner Performance

