Dairy Guidelines

COOPERATIVE EXTENSION SERVICE, V.P.I., BLACKSBURG, VIRGIN

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Treatment of Rubber Milking Machine Parts

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No manufacturer has ever made a set of rubber milking machine parts that will last forever. They crack, wear, and lose shape under the best of care, and should be replaced at the first sign of wear. Neglected rubber parts cause contamination of milk and untold damage to the cow's udder.

Dairymen should provide 2 sets of inflations and milk hoses for each machine. Two sets of rubber parts, rotated and properly treated weekly, will last as long as 3 sets used continuously.

Rubber Parts Absorb Dirt

Rubber is somewhat like a sponge. It may feel smooth, but it has small holes and crevices that soak up skin oils, butterfat, and milk solids. These materials cause rubber to lose its elasticity and shape. Such inflations create harsh friction on the inner lining of cows' teats and lower parts of their udders, causing irritation or injuries.

The material absorbed into rubber also provides food for bacteria, which, in turn, multiply and contaminate milk. Mastitis germs from infected cows also thrive in dirty, porous rubber parts. The milking machine, then, becomes a carrier for the spread of these germs.

The twice-daily routine of scrubbing, rinsing and sanitizing will not remove skin oils and butterfat from rubber parts. Treatment in a strong caustic solution will.

Treatment

In the past, we have recommended that rubber parts be either boiled or cold soaked in strong lye solutions each week. Boiling in lye, however, is

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hazardous and oftentimes difficult to practice because many milkhouses lack heating equipment. On the other hand, cold lye soaking, although widely used, is not as effective as hot lye treatment and does not allow for the dry rest necessary for rubber parts to regain their elasticity and shape. For these reasons, we are now recommending the "hot soak-short time" method for treatment of rubber parts.

Hot Soak-Short Time Method After using rubber parts (inflations, tubing, milk hose, and cover gasket) for one week, place them in a plastic or rubber pail, or in a stainless steel wash vat or other container. Cover all parts completely with a measured amount of hot water (at least 160°F). Carefully add and dissolve 5 heaping tablespoons of lye crystals and 2 ounces of a hand-washing detergent for each gallon of hot water. Allow inflations and other rubber parts to remain in the solution for 2 or 3 hours.

There are a number of commercial rubber treatment compounds that are also highly effective. Generally they are lye compounds, containing alkaline water softeners which, when added to hot water, require soaking of rubber parts for 2 to 3 hours. Users are cautioned to follow directions given on the product label.

After Treatment Remove the rubber parts, or drain the solution from the container, and rinse the parts thoroughly in cold water. Brush-wash all parts thoroughly in a strong acid solution, using 1 ounce of milkstone remover in each gallon of warm water. Rubber gloves are recommended to protect hands. Then rinse thoroughly in hot water and drain the parts until dry. Store them in a dry, dark, protected place until they are used again the following week. This dry rest will help the rubber regain its elasticity and shape. Storage in the dark is important, because light affects the aging of rubber by causing the oxygen in the air to combine with the rubber. Strong sunlight has a very destructive effect upon rubber.

The Life Of Inflations

Inflations, once they have been used, form a pattern of collapse in which they will always collapse at the same point and in the same plane. This pattern will continue for as long as the inflation is in use. At a rate of 50 pulsations per minute and an average milking time of 4 minutes, an inflation will collapse 200 times on each cow. If the machine is applied to 20 cows twice daily, each inflation will expand and collapse 8,000 times a day.

Manufacturers have done an excellent job of designing and constructing inflations that will withstand this strenuous treatment. However, it is easily seen why they have not, as yet, developed an inflation that will last forever. Inflations will wear, and become weak and deformed after long use. They will also lose their elasticity and become hard. This hardening of the rubber leads to roughness, cracking, and eventually to leaks. Continuous use, without proper treatment and rest, hastens the destruction of rubber parts.

Many dairymen pride themselves on their ability to take proper care of rubber milking machine parts. This often leads to the dangerous practice of continuing to use apparently good rubber parts long after they should have been discarded. Under the best of care, with 2 sets per machine, rubber inflations should be discarded and replaced after 1,600 individual cow milkings. When used continuously, they should be discarded after 1,000 individual cow milkings.

Determining The Use-Life Of Inflations On Your Farm

1. The following formulas are useful for determining the number of days that inflations may be used when 2 sets per machine are available:

$$\frac{\text{Herd Size x No. of Milkings/Day}}{\text{Number of Machines}} = \text{No. individual cow milkings/machine/day}$$

$$\frac{1{,}600}{\text{No. Cow Milkings/Machine/Day}} = \text{No. days inflations may be used}$$

Example: 50 cow herd milked 2 times a day with 4 machines

$\frac{50 \times 2}{4}$ = 25 individual cow milkings per machine per day

$\frac{1{,}600}{25}$ = 64 days inflations may be used

Since 2 sets are used on alternate weeks, both sets should be replaced after 4 months' use (128 days).

2. The following formulas should be used when inflations are used continuously.

$$\frac{\text{Herd Size x No. Milkings/Day}}{\text{Number of Machines}} = \text{No. individual cow milkings/machine/day}$$

$$\frac{1{,}000}{\text{No. Cow Milkings/Machine/Day}} = \text{No. days inflations should be used}$$

Example: 50 cow herd milked 2 times a day with 4 machines

$\frac{50 \times 2}{4}$ = 25 individual cow milkings per machine per day

$\frac{1{,}000}{25}$ = 40 days inflations may be used

Note: Two sets of inflations per machine, treated properly and alternated weekly, will outlast 3 sets of inflations that are used continuously. (128 days vs. 120 days)