

## Geometry of milk liners affects milking performance in dairy cows

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### SUPPLEMENTARY FILE

**Supplementary Table S1.** Design characters of square and round barrel milk liners.

	Treatment	
	Round liner	Square liner
Mouth piece bore diameter, mm	20.0	20.0
Barrel shape	Round	Square
Barrel length (not stretched), mm	131	131
Barrel dimension (at 75 mm from mouthpiece), mm	Inside diameter 22.2	Inside measure 23.0 across flats
Material	BfR compliant high-performance rubber	BfR compliant high-performance rubber
Liner stiffness	55-60 Shore A	55-60 Shore A
Barrel wall thickness, mm	2.5	2.5

**Supplementary Table S2.** Cow behaviours observed during afternoon milking session in EARLY

Observation	Description	Citation
Urination	A discharge of urine	Prescott et al. (1998); Rushen et al. (1999)
Defaecation	A discharge of faeces	Phillips et al. (2021), Prescott et al. (1998)
Stomping	A raising and lowering of the foot in one place	Phillips <i>et al.</i> (2021), Kauppi (2014)
Kicking	A forward or sideways leg movement, without dislodging claws	Phillips <i>et al.</i> (2021), Prescott <i>et al.</i> (1998), Kauppi, (2014)
Kicking off the milking unit	A kick that causes the claws to fully or partially dislodge	Phillips <i>et al.</i> (2021), Kauppi, (2014)