Consequences of Incorrect Parameter Setting

Temperature

The right temperature is critical to the dissolving and blending process. This temperature is normally measured in two places: on the batch tank and on the outlet of the heat exchanger.

If the mix temperature is too low:

- the powdered ingredients will form small lumps and not mix and dissolve completely
- the AMF will solidify and block the mixer
- the AMF will not blend into the mixture smoothly
- the mixture will look like lumpy porridge instead of being smooth and creamy.

If the mix temperature is too high:

- the mix may develop a burnt flavour
- the amount of fat breakdown may increase, causing a rancid taste to develop in the ice-cream before it reaches its use-by date
- the fat may separate out of the homogenous mixture.

**NOTE:** The batch mix temperature can only be adjusted by altering the heat exchanger hot water temperature.

If the hot water temperature is too high:

- the batch mix temperature may be too high
- product burn-on, a build up on the heat exchanger plates, may occur
- the amount of heat energy being conducted through the plates may be reduced, causing the mix temperature to drop, the operator to increase the hot water temperature, and so on, until the heat exchanger blocks
- it may cause a vapour lock and pump cavitation due to the hot water boiling in the hot water circuit.

**NOTE:** The hot water temperature can only be adjusted to 98°C.
Mix tank agitator speed

The mix tank agitator speed is critical in achieving a smooth homogenous mix.

If the agitator is set too slow:

- the batch will not be circulated correctly in the batch tank and will not turn over evenly
- some parts of the batch will be incorrectly mixed
- the temperature will be uneven throughout the mix.

If the agitator speed is set too high:

- some of the ingredients may separate from the mix
- it may cause excessive frothing, leading to cavitation in the mixer.