



## Questions about milk precoolers

September, 1994

AG0212

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ISSN 1329-8062

*The emphasis being placed on saving electricity has led to the growing popularity of precoolers.*

The following questions asked about precoolers are the most common, and the answers will give you a better understanding of their operation.

### What does a precooler do?

The milk is cooled by water in the precooler before entering the bulk vat. Thus, the refrigeration unit operates for a shorter time. The cooler is fitted between the reloader and bulk vat.

### Can a precooler save money?

Yes. With a precooler the refrigeration running time is normally reduced by 40 per cent.

### Will the savings on refrigeration be greater than the extra cost of pumping water?

Yes. A much smaller motor is needed in the water pump than on the refrigeration compressor.

### How much water is needed?

You need about three litres of water for every litre of milk. At this ratio the milk will be cooled to within about 2°C of the water temperature.

### Isn't this a waste of water?

No. The water can be used for:

1. udder washing
2. yard washing
3. refilling the hot water cylinder

For those with a very limited water supply and high summer water temperatures, the water can be recirculated through a cooling tower. Cooling towers are used on some farms in Gippsland and in the Western District, particularly the Colac area.

### What does a precooler look like?

There are three types-

1. Surface or bar cooler. These were common before the introduction of refrigerated vats. The milk flows by gravity over the outside of pipes through which water is pumped. The milk is exposed to the air.
2. Plate cooler. This cooler consists of a series of stainless steel plates, normally measuring 120 mm × 635 mm, sandwiched together. Water and milk flow through alternate spaces between the plates. The milk is totally enclosed.
3. Shell and tube or tubular type. The water and milk flow through a series of tubes enclosed in a jacket through which water flows. The milk is fully enclosed.

The first two are by far the most popular. The shell and tube cooler is not widely used. The tubular type is suitable for high milk flows.

In a few dairies the milking line has been jacketed. Water is pumped through the jacket thus partially cooling the milk as it flows to the reloader. This cooling system is not as efficient as the ones above.

### How can a precooler fit in with my existing milking machine?

1. Surface cooler. Provided the milk at the bottom of the cooler can flow directly into the vat no additional pumping equipment is necessary.
2. Plate cooler. If you have a milk pump, the cooler can be positioned in the delivery line between the pump and the bulk milk vat. No additional pumps are required. With a spit chamber reloader a milk pump is necessary. The spit chamber need not be replaced, as the milk can be pumped from the reloader vat.
3. Shell and tube cooler or tubular type. The pumping requirements are the same as for a plate cooler. As this type of cooler is generally about 3 m long and 300 mm wide, considerable space is required.

### Is a filter necessary?

A filter is essential for the plate and shell and tube coolers. Foreign matter in the milk can block the small pathways in the cooler reducing the cooling efficiency and making cleaning difficult. A filter is not required with a surface cooler as milk flows freely over the cooling surface.

### What sort of filter is necessary?

An in-line filter. The filter can be a fabric type, stainless mesh or paper sock.

If you are using a strainer or releaser vat with an efficient filter, you won't need additional filtering.

### Are coolers difficult to keep clean?

No. Provided you carry out the following routines:

1. Clean with cooling water turned off and preferably drained from the cooler, otherwise temperatures of the cleaning water are reduced and cleaning is inefficient.

2. It is advisable to use a fresh hot water rinse as the last step in cleaning the cooler. Manual cleaning at the completion of each milking is required with a surface cooler.
3. Before cleaning a plate or shell and tube cooler, the milk filter should be removed, cleaned and replaced in the pipeline or cooler vat. Otherwise, material can lodge in the cooler during cleaning.

For accurate prices of equipment contact your local milking machinery agent. You can obtain detailed information on precoolers and their suitability for your dairy from dairy supervisors or dairy husbandry officers.

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